

EASTERN
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ANNUAL NUMBER 1977

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Industry : Problems and Prospects

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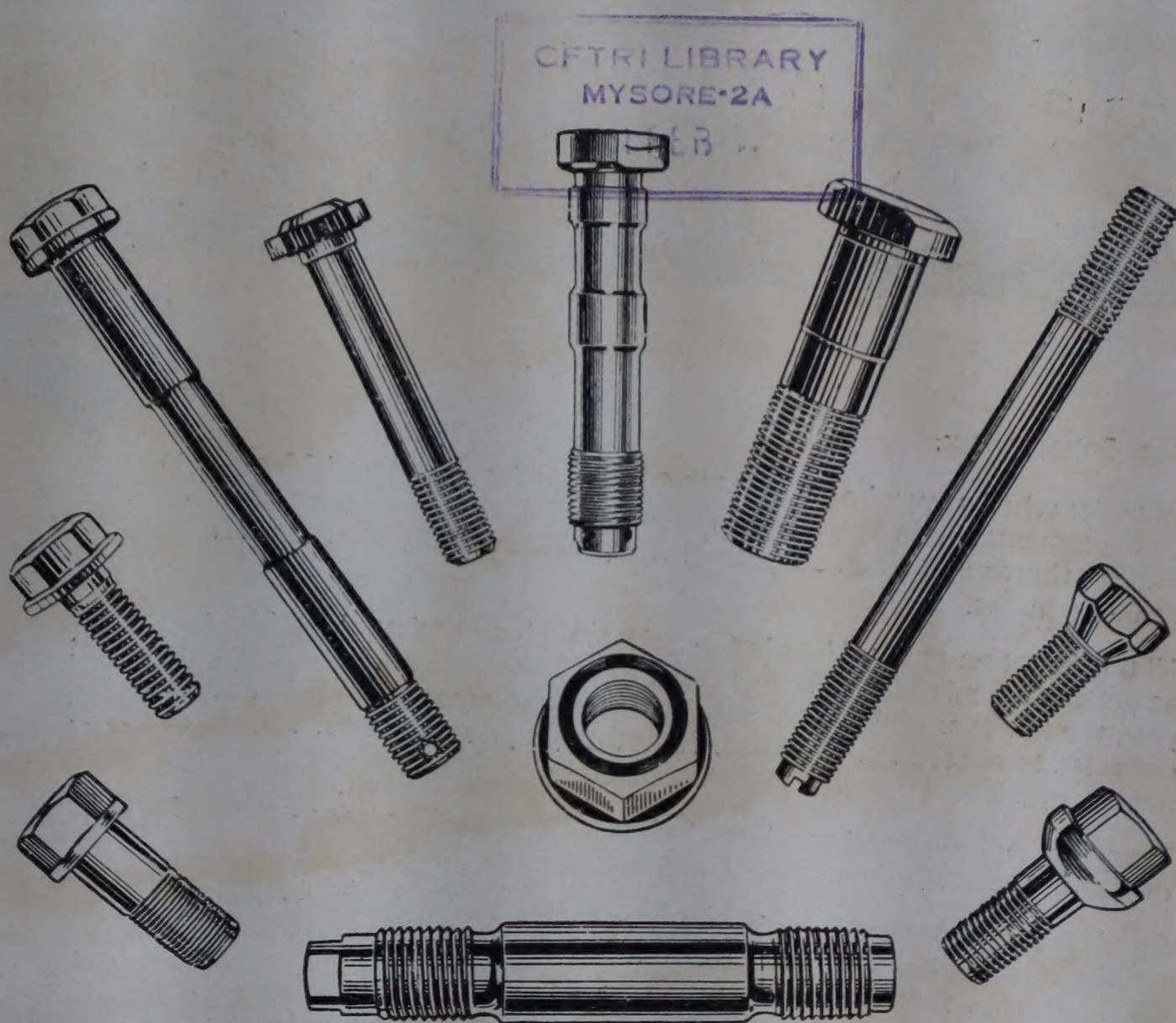
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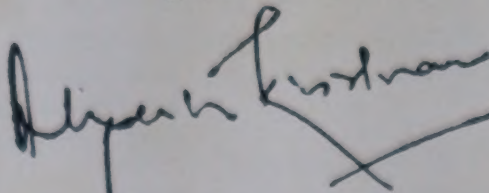
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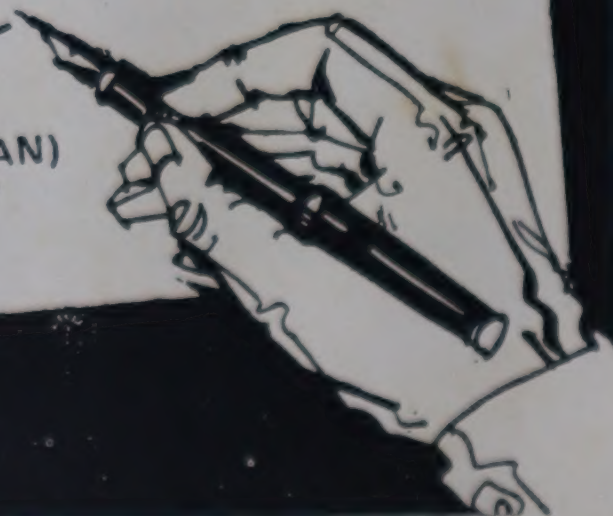
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(K.P. GEETHAKRISHNAN)
Managing Director
Phone: 82606



Eastern ECONOMIST

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On the upswing?

S. P. Chopra

THE INDUSTRIAL scene in this country looked reasonably cheerful throughout 1976 despite some disappointing spots here and there, largely because the supply of industrial products became easy through sizeable increases in production, and shortages which had plagued the markets in 1973 and 1974 became, by and large, a thing of the past. The official index of industrial production maintained a satisfactory advance in each month of the year and, according to the latest estimates, the rise in industrial production is likely to be more than 10 per cent above the level attained in 1975.

How has the improvement in output come about? It seems that a number of positive factors assisted in bringing about a happy turn in the industrial field and the most important of them were improved employer-employee relations, increased utilisation of installed capacity, fast freight movement by the railways, and a significant improvement in the working of the public sector undertakings. The industries which exhibited remarkable dynamism in production were steel, aluminium, fertilisers, coal, cement, vanaspati, scooters, cars and electricity.

The utilisation of available capacity in many industries went up sizeably with the result that new peaks in output were attained. In the case of the steel industry, for example, the capacity utilisation averaged 90 per cent. Some of the steel plants such as Bhilai and Rourkela rose to 100 per cent capacity utilisation for five to six months in the year. This was certainly heartening because even in the advanced countries, the capacity utilisation of steel plants was usually around 75 per cent. But for the poor show put up by the Durgapur and IISCO steel plants, the overall rating of the steel industry could have been still better.

The coal-mining operations in 1976 kept up the progress attained in 1975 and for the first time output was expected to increase beyond 100 million tonnes. It could have been accelerated further but for the slackness in demand partly caused by the increased output of hydro-electricity due to the good rains in the monsoon season. The demand for coal in this country can be raised further by launching a campaign to make increased use of coal in place of wood, cowdung and kerosene. Enhanced use of coal instead of fuel oil in industry could also give a fillip to demand and, in turn, to production.

The increase in the output of fertilisers necessitated a curtailment in imports, thanks to the improved performance of this industry. In 1975-76, the total production of nitrogen was 1.55 million tonnes as against the target of 1.50 million tonnes. The target for 1976-77 is 1.95 million tonnes which is likely to be achieved resulting in the saving of foreign exchange up to Rs 74 crores. The capacity utilisation rose from 59 per cent in 1974-75 to 70 per cent in 1975-76 and is expected to improve further in 1976-77. But for the sick units of Durgapur and Cochin, the overall performance of this industry would have been improved further.

In the case of the engineering industries also, the utilisation of idle capacity was speeded up. In a study of 200 top manufacturing units, the Engineering Export Promotion Council tried to locate the plants which had not been able to fully utilise their capacities and the reasons for failure in this regard. Many of these units had a good record in export earnings but because of a multiplicity of extraneous factors, they were not in a position to use the available machinery to the utmost. While enough increase in production had taken place, there was certainly room for further improvement.

Sugar industry however put up a poor show. Its total production in 1975-76 was around 4.2 million tonnes as compared to 4.8 million tonnes in 1974-75 though it

was now expected to improve to 5.0 million tonnes in the 1976-77 sugar season. This will result in increased export of sugar which would earn valuable foreign exchange for the country. The other industries which failed to maximise the utilisation of available capacity were jute textiles, jeeps and railway wagons and each one of them has its own peculiar reasons for dismal performance in this regard.

The impact of improved industrial relations in the wake of the emergency was witnessed in the second half of 1975 which continued in 1976 as well. The man-days lost due to strikes and lockouts were 4.4 million in July-December 1975 as against 17.1 million in January-June 1975. In 1976 as well, the man-days lost were kept down by the government by making strikes illegal and also by making it obligatory for the employers to seek official permission for any lock-outs.

railways' performance

Since June 1975, the railways in this country had improved their performance significantly. Earlier, the rail-users had to encounter a number of difficulties but within the span of 1½ years, revolutionary change had come about in the working of the railways which had kept the wheels of industry moving faster and faster. At the time of writing, figures were available up to August, 1976, which indicated a rise of about seven per cent in tonnage carried and about 14 per cent in the earnings of the railways.

Reports from users of railway transport in various industries had indicated increased satisfaction in the quality of service received. In fact, some industrialists are of the view that the credit for all-round improvement in industrial production goes to the railways which have exhibited both improvement as well as a spirit of innovation in their functioning. The industrialists are having less difficulty in getting raw materials and empties for finished products. In some areas, indents are being liquidated within 24 hours and the era of wagon shortages has in fact been turning into the era of wagon surpluses. It will not be wrong to say that substantial progress recorded within the last 18 months has resulted in the availability of industrial goods all over the

country, thanks to the happy performance of the railways. There is no shortage of coal anywhere in the country, and this applies to all other essential goods such as cement, paper, steel and engineering products. According to the general manager of an engineering concern, goods are arriving by rail even before the papers are received by post. Even then, there are certain areas where much more needs to be done. For example, in the transport of cotton and cotton textiles, the railways have played a declining role. The railway traffic in raw cotton has almost halved on broad gauge between 1960-61 and 1975-76. In the case of cotton manufactures, it has been reduced to almost one-fourth during the same period. Most of the cotton and cotton manufactures in this country are now being moved by road, the main reason being pilferage of goods in the yards as well as on the route, stiff demurrage charges, cumbersome procedures of railways, delays in the delivery of goods at destination and also in the settlement of claims, lack of adequate facilities at railway sidings etc. It is necessary that the railways should not be complacent over the partial improvement witnessed in recent months. There are still vast areas where it can improve its performance and attract some of the traffic which moved away from it because of its inefficiencies in the past.

role of public sector

The public sector undertakings have played a useful role in raising the level of industrial production. Some of the units have almost doubled their output while all the major units taken together are reported to have increased their output by 25 to 30 per cent in 1976 over 1975. The public sector undertakings responsible for producing steel, coal and electricity have improved their working operations through efficient utilization and management of available resources. True that improvement in industrial relations played a key role in the excellent performance of these units but in recent years greater attention has been paid to new skills in management which have had a healthy influence in their working results.

That a number of industrial units in this country have turned sick in the recent

past has started a controversy as to the causes of their sickness. The official point of view is—and it continues to be so—that it is the incompetence of the management which is responsible for the sickness of the industrial plants. At a recent speech made at Hyderabad by Mr T.A. Pai, the union Industry minister, it was stated by him that the government was thinking of amending the Industries (Development and Regulation) Act so as to empower the government to issue directions requiring a company owning an industrial undertaking to remove from office incompetent or dishonest chairman or board of directors, managing or whole time directors, or manager, and to appoint with the approval of the central government any person in place of persons so removed. It was also being planned that the government should acquire powers to issue such directions as might be necessary to ensure proper and efficient management of the industrial undertakings or to prevent misapplication of the funds of the undertakings.

government responsibility

The industry, however, is of the view that the sickness of the industrial undertaking is caused by the policies pursued by the government. For instance, the cotton textile industry is currently facing one of the worst crises in its history for which the government is responsible in part if not in full. The compulsion to produce controlled cloth and sell it at a loss broke the back of many a unit. When a number of these units became sick and the government took them over, it was realised that they could not financially cope with the burden of losses through the sale of controlled cloth. Promptly, these units were asked not to produce this cloth. If the government had taken this step in the first instance, these units could have been saved from bankruptcy and state take-over.

Again, many units had submitted proposals—as far back as 1972 in the state of Maharashtra particularly—for the modernisation of their units but the state administration slept over these applications. The reason for delay in the disposal of these applications was given to be the anxiety of the Maharashtra government to work out a plan for the

dispersal and decentralisation of industries from Greater Bombay to other parts of the state. Surely, the question of shifting the mills was a complex one as it involved considerable capital cost besides other constraints but inordinate postponement of the decisions in this regard proved disastrous for the units concerned.

Again, the rate of return on equity capital plus reserves has been pegged at a low level in respect of controlled commodities, and also in the computation of bonus accruing to workers. Depressed rate of return has acted as a damper in the flow of capital thus hindering their further expansion. These rates ranging between six and 8.5 per cent were fixed in the sixties when the Bank rate was around six per cent. Now that it was nine per cent and the credit to entrepreneurs was being made available at between 12 and 15 per cent, there was urgent need for a revision in the rate of return on equity capital as well as on reserves. It was this policy of neglecting the legitimate claims of the industry which resulted in making industrial units sick.

some recommendations

Recently an attempt was made to study this question in depth by the Vidharba Industries Association. A team of experts went into the genesis of industrial sickness in this region and it has come up with a number of recommendations which are:

- (a) Early warning system for sickness and simultaneous action to arrest sickness and nurse the unit should be devised.
- (b) For a confirmed sick unit, interest rate for the nursing funds should be at par with the rate charged in the case of famine relief measures in agricultural economy and the maximum rate of interest should be two per cent less than the Bank rate i.e. seven per cent.
- (c) Moratorium to be put on repayments and outstandings to be converted into appropriate long-term or mid-term loans by all financing agencies.
- (d) Fresh funds should be provided by nursing back the unit to health, and while doing so, the bank should take into account the quality of management, the employment-generating and employment-

sustaining capacities coupled with the supervisory role of the bank for financial control and discipline.

(e) As "nursing back a sick unit to normalcy is a painstaking, patient and exasperating assignment", the banks should convert the debts of the borrower into equity to the extent of 35 to 40 per cent which again may be a temporary measure and equity be again re-converted into liquidity for a phased programme with the small scale unit gaining efficiency and profitability.

(f) For help in marketing, consortia or pooling of the resources of small units should be promoted and encouraged by the lending banks in which the Regional Development Corporation should play a leading role.

warning signals

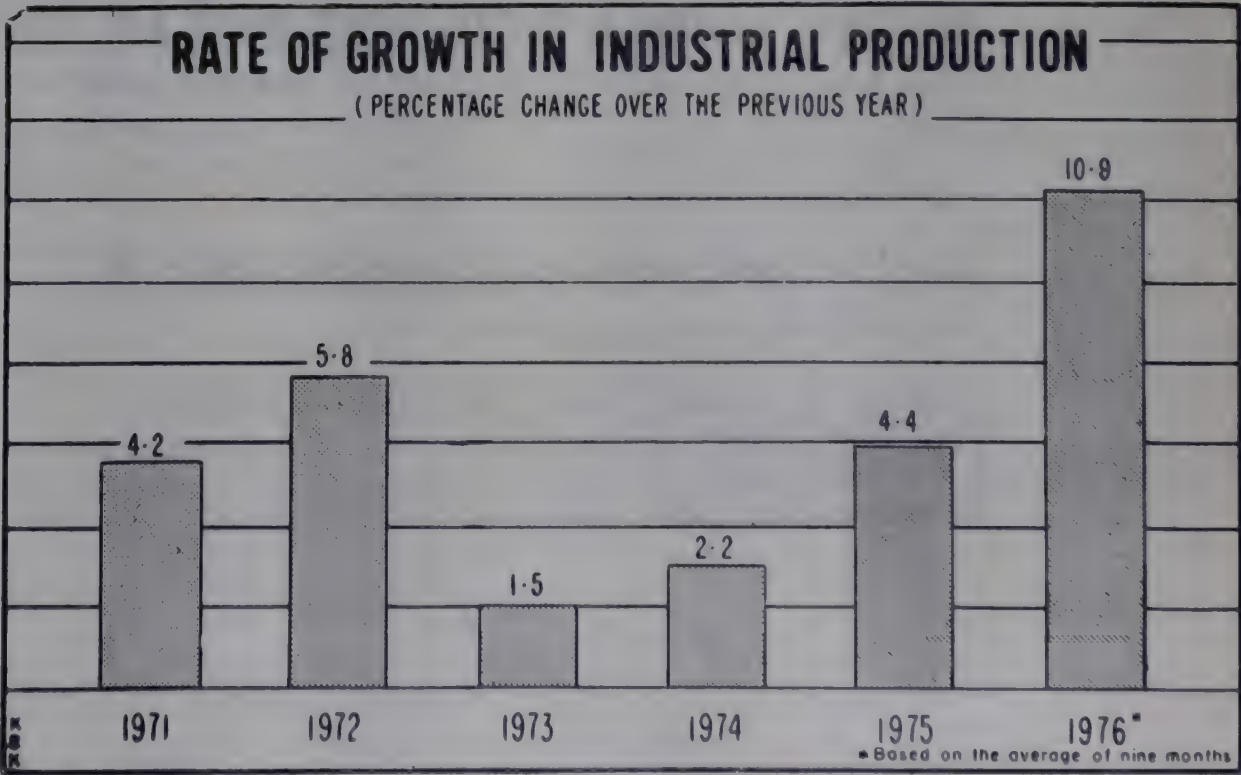
The team conceded that a system needed to be devised whereby warning signals regarding sickness could be obtained in time so that remedial action could be taken promptly. But it would be impossible to bring a sick unit to health without providing certain assistance in the shape of cheaper loans, moratorium on repayments of outstandings, provision of fresh funds and, if possible, to convert them into equity.

So far all attempts to nurse the sick units have been confined to large-scale undertakings. The small-scale sick units especially those in the backward areas,

have received scant attention from the government. In view of the fact that the small-scale industries have good employment potential—the main reason for which they have been encouraged in this country—it is necessary that they should not be neglected in any scheme of rejuvenation of sick units.

three-tier scheme

According to the union Commerce minister, Prof D.P. Chattopadhyaya, the government was planning to work out a three-tier scheme to get reopened the closed mills, a majority of which were in the cotton textiles and jute industries. At the end of November 1976, as many as 36 cotton textiles and seven jute mills were lying closed. The banks, in the first stage, would be asked to extend financial accommodation to bale out the sick units, failing which the unit would be encouraged to merge with one or more larger units. Only after both these measures failed to put it in a healthy state, will the government move in and take it over. The government, he said, was not inclined to adopt blanket take-over of closed mills but it was certainly keen to get the closed mills, reopened. He acknowledged the fact that the workers had shown, during the last 18 months, that they were capable of subjecting themselves to discipline under the most rigorous conditions. It was now for the government to take steps so that they could once again go back to work.



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Any more questions ?

Ask the Public Relations Officer,



**West Bengal Industrial
Development Corporation Ltd.,**
23A, Netaji Subhas Road, Calcutta-700 001.
Telephones : 22-2448, 23-1615; 23-1628.

WBIDC-12A

Investment prospects in Indian industry

P. Chentsal Rao

AFTER A long and gruelling period, the economy has undergone considerable improvement in the recent past. Production has, in general, picked up. Prices, at large, have come under control. There is a sense of confidence and new vigour visible all over. Above all there is determined leadership that wants to see the country on the road to healthy and rapid progress. Never before was there a confluence of so many conducive factors for growth that even the modest of predictions today cannot but hold out some good prospects for future.

good impact

Investment decisions are often gauged against too many odds. The present improvement in the general health of the economy may well be expected to have a reasonably good impact on the level of investment activity. But, can there be a massive surge of investment enough to take the economy out of the vicious circle of low production and small capital accretion? Is the industry able to fully utilise these propitious conditions to attain new heights in investment, production and employment? The answers, however, cannot be unequivocal because there are contradictions in the present situation which need to be cleared before a smooth transition to a higher stage of development is achieved.

Industry is expected to grow

Mr. P. Chentsal Rao is Secretary-General of the Federation of Indian Chambers of Commerce & Industry.

at the rate of 9 to 10 per cent in the next two years to make up for an overall rate of growth of seven per cent in the fifth Plan period as a whole. Production trends, at present, in many industries certainly indicate a possibility of this being achieved. But it should also be mentioned that the current upturn has come about largely through improved capacity utilisation which in turn has been facilitated by easier availability of such inputs as power and raw materials coupled with a greater cooperation from the workers' side. But there has not been any comparable revival or buoyancy of investment in the industrial sector. The paid-up capital raised by non-government companies during 1975-76 has only increased marginally by six crores of rupees from a level of 162 crores in the last year. As against 296 industrial licences and 604 letters of intent issued during 1975 for setting up of new undertakings, the corresponding figures for the half year period January-September 1976 read only 238 and 209 (see table alongside).

The response from the recently delicensed industries is not also encouraging. Even a year after the delicensing only about 135 registrations have been made. In 10 of the 20 industries delicensed the response has been nil and it is negligible in two other industries.

However, this does not give the complete picture. The government has in recent times initiated many measures to

improve the situation. A new scheme of investment allowance has been introduced in place of the old scheme of development rebate. Additional production in many industries has been accorded excise rebate. Some steps have also been taken to revive the demand for selected consumer goods. All these may take a little more time to make their final impact and once they do so the investment climate may improve.

Meanwhile, there have emerged two very important factors that could trigger off investment on a larger scale. First the country has proved well on the food front. Besides having an annual production of food-grains around 118 million tonnes, we have been able to build a buffer stock of 17 million tonnes. Secondly, our foreign exchange reserves have reached a near comfortable position, thanks mainly to the

non-resident account scheme introduced last year and partly to our improved performance in the export markets.

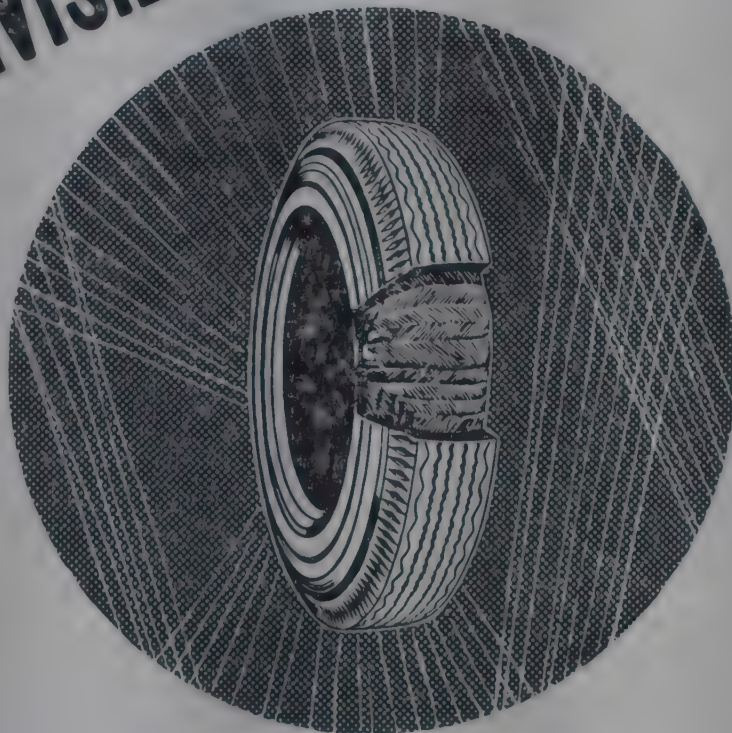
We have as on November 26, 1976, foreign exchange reserves excluding gold and SDRs worth Rs 2080 crores against Rs 927 crores a year ago. While the former should give us the needed leeway in terms of price stability for stepping up investment, the latter would go a long way in providing the foreign exchange component of many of our investment projects.

These factors are conducive but not enough to induce the desired amount of investment into industry because even existing industries have been subject to a profit squeeze. Despite the general improvement in production, the balance sheets of many industrial undertakings still depict depressing picture and as such there has

Licences and Letters of Intent Issued in 1975 and (Jan-Sep.) 1976

Nature of Licences	1975		1976 (Jan-Sept)	
	Letters of Intent	Industrial Licences	Letters of Intent	Industrial Licences
New Undertakings	604	296	238	209
New Articles	204	168	151	140
Substantial Expansion	147	291	82	108
New Article/Substantial Expansion	7	6	5	6
Carrying on Business	—	266	—	98
Total	962	1027	476	561

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not been any significant improvement in the returns position, especially in the vital segments of industry. Investment in industrial ventures in general has not proved a better proposition in the eyes of the investors than other forms of investment. The reasons have been many which need to be identified and remedied on the basis of a detailed industry-wise analysis.

slump in sales

Some of the general problems faced have been slump in sales, high interest rates and unremunerative controlled prices. It is indeed disquieting to see some of our industries choked with stocks even with very low levels of production and per capita consumption. Penal rates of interest brought on by the tight money policy introduced in 1974 impose great strains on industry. Depletion of resources on account of continued losses during the years of crises and the consequent dependence on bank finance for most of their credit needs has made the situation still more precarious.

Control price is another factor that needs review. The inadequate rates of return allowed in the computation of control prices as well as the lack of any inbuilt mechanism for accommodating subsequent cost escalations, among other deficiencies of the control price system, have to a large extent adversely affected the profitability in many of these industries. A multi-pronged attack in all these areas may be necessary to make industrial ventures commercially viable.

Under the present licensing system, the scope for new investment during a Plan period is limited by the overall physical capacity targets set out in the Plan. As of now, the scope

for setting up further capacity has been exhausted in many industries. However, the recent delicensing of 20 industries as well as other areas available under the various other liberalisations still offer some good field for investment activity. Additional scope has been opened up by the new schemes of allowing export-oriented industries even in areas where the capacity targets have already been fulfilled. Are these opportunities relatively more profitable than those available elsewhere? Here again there is need for planning concerted action that would ensure that opportunities made available are also business worthy.

escalating costs

The viability of new investments has been greatly hampered by steep escalations in the project cost of new ventures. During the period 1972-75, the wholesale price indices of the machinery and transport equipment group have been up by about 100 points. The rise has been most severe in the case of certain individual industries. A five-million unit tyre plant which would have cost around Rs 8-10 crores in 1960, involves an investment of the order of nearly $3\frac{1}{2}$ to 4 times at present. The same is true of many other industries and such escalations in cost have not only made their products less competitive with the products of the already established units, but have also posed problems of resource mobilisation on a large scale.

The investment-output ratio of the new units contrasts greatly against that of the older units as a result of which there is distortion of price-parity and reduction in the rates of return on new investment. The problems faced by the new units are more serious

than one of declaring dividends and there should be provision for some incentives and reliefs which could place them on an equal footing with the older units.

A committee under the chairmanship of Mr S.S. Marathe, chairman, Bureau of Industrial Costs and Prices, had gone into these problems and suggested some measures to eliminate such disparities. The recommendations of the committee will have to be implemented expeditiously in order to alleviate some of the problems facing new investment.

The enormous hike in the prices of capital goods is itself a matter of great concern. In view of the comfortable foreign exchange position, the government has liberalised import of capital goods. This is a step in the right direction and should help expeditious implementation of investment decisions.

resource constraint

However, the overall constraint for investments will be one of finding resources. It is expected that a total of Rs 63,700 crores will be invested during the fifth Plan period. A substantial portion of the targetted investment is yet to take place. The main problem is now one of finding commensurate resources particularly from non-inflationary sources. The Plan document has placed greater reliance on budgetary resources and generation of savings by public sector undertakings. Savings in the private corporate sector have been mainly accounted for by the accumulation of depreciation allowances. Concerted attempts should be made to facilitate larger generation of investment from corporate earnings. The criterion for pricing should be one of pro-

moting viable running with ample scope for generation of "Capital Funds". Corporate earnings form a major source of investment in many developed countries and an increase in such investment is considered as a sign of the economy attaining maturity. There are a number of factors that operate against such a transformation in our country. It should be seen whether abolition of capital gains tax, reduction in the corporate tax and removal of tax on inter-corporate investment could fetch the desired effect. The greater reliance placed on budgetary resources may again pose a problem for investment by other sectors.

private sector's role

The private sector will have to generate as much as 42 per cent of the total investment earmarked for the fifth Plan. Realisation of this goal may necessitate some imaginative measures. Foreign investment may be of some help to bridge the gap. The investors abroad have really been attracted by the qualitative change that has enveloped the Indian economy and it may not be difficult to attract funds from abroad for investment provided a positive approach is made.

The government and industry are really keen to have the field set right for a total economic breakthrough. The co-operation from the business and workers is no less impressive. In the ultimate analysis, it is only the rate of growth of investment that will ensure larger employment and the general improvement in the standard of living. A bold imaginative investment under these circumstances can certainly take the economy to newer heights.

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PEOPLE PLANNING THE FUTURE

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Outlook for industrial growth

H. P. Nanda

SINCE THE attainment of Independence, India has made considerable progress in building its industrial infrastructure. Our industries today are fairly diversified, including quite a few which employ sophisticated technology in such fields as electronics, petrochemicals, atomic power, etc. More recently, export performance of our industries has also been promising. Along with these positive achievements, however, there are newer problems associated with faster growth. Just as in mountaineering, so also in economic development as we scale new heights, newer problems and challenges appear which call for new strategies in tackling them.

increased output

On a gross statistical measurement, industrial production had increased by about 274 per cent in 1974 as compared to 1951. While almost all industries contributed to this increase the growth has been particularly spectacular in the newer and more complex industries such as, petroleum products, aluminium and other basic metals, electrical and non-electrical machinery, heavy machines, fertilisers and petrochemicals.

During the quarter century of growth we had faced many vicissitudes. Resource constraints, both domestic and more particularly foreign exchange resources, fluctuations in agricultural production

which in turn reflected itself on the performance of industry, technological gaps to be covered in industry and the hard choice in the initial years of planning between capital-intensive long-gestation projects and quick maturing industries were some of the few problems we faced. Added to this was the need to maintain a balance between industries in capital goods sector vis-a-vis those in consumer goods sector.

basic industries

For a country which essentially needed to build its basic industries, in the initial stages of planning it was inevitable that a large proportion of our investments had to be made in basic metals, mining and heavy machinery units, which can show results only after a period of ten years or so. Again, in the first two or three Plans our outlays on creation of irrigation facilities through large multi-purpose dams had to be substantial. There was thus the familiar controversy among economists and planners about the balance being kept between industry and agriculture as well as capital goods and heavy industry sectors and consumer goods industries.

It was only from the sixties onwards that the importance of input industries such as fertilisers, pesticides, farm machinery etc was realised. Thanks to a combination of favourable factors along with such diversification and new areas opened up by agricultural research, we were able to make a partial

breakthrough in the primary sector of our economy in mid-sixties. This corrected the imbalance, in a way, between agricultural and industrial growth.

The picture from mid-sixties to date is of course not a consistent one, being marked by uneven if not at times halting progress. The set-back to the pace of progress was due to several factors, notable among them being backlog of unaccomplished Plan objectives, severe drought of 1965-66, economic instability caused by two major wars with Pakistan, constraints in availability of basic raw materials and power for industries and above all the spiralling inflation since 1972 of a type not experienced so far in the post-war years.

It is said that history quite often repeats itself. But in our case we may justly claim that we have made history in recent times following the effective measures taken by the government during the last two to three years to control inflation, stabilise the economy and

improve overall discipline in the country. Since the promulgation of the emergency in June 1975 and the declaration of the 20-point programme, there has been a welcome change in the climate for industrial activity and this has been further improved upon by the various pragmatic measures taken by the government in the spheres of both administrative and fiscal policies. The gradual movement away from the highly restrictive controls to selective liberalisation of these controls, be they licensing of industries, import policy or other has resulted in an overall improvement of the performance of the economy during the last year or so. Table I brings out the major highlights of our economy during 1974-75 and 1975-76.

In the interest of achieving higher levels of production, imports of raw materials have been liberalised and the scope for imports under Open General Licences has been enlarged. Industries which are not foreign dominated or covered by the MRTP Act

TABLE I
National Income, Saving and Investment

	1974-75	1975-76
National income (% growth at 1960-61 prices)	0.2	5.5
Domestic saving*	13.1	14.5
Inflow of foreign resources	1.7	1.5
Aggregate Investment*	14.8	16.0

* As % of national income at current prices

Source: Reserve Bank of India, Annual Report, 1975-76.

Mr H.P. Nanda is president, Associated Chambers of Commerce and Industries of India.

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have been allowed expansion of production up to specified limits. Encouragement has also been given for setting up capacity based on in-house R & D efforts. The government has also taken a liberal attitude towards allowing important industries to utilise their capacities fully and even produce in excess of their licensed capacities under certain defined parameters. In order to liberalise investment procedures, the administrative ministries have been delegated wider powers to dispose of certain types of applications such as for diversification, carry on business licences, extension of the validity period of letters of intent/industrial licences and approvals for change of location within the same state. The effects of these liberal measures have been better industrial performance in 1975-76 as can be seen from Table II.

significant achievement

Present indications are that on the manufacturing side the country has increased production by 13 per cent in the first half of the current year. One of the significant achievements has been the improvement in the performance of public sector undertakings, some of which had shown profits for the first time. It is expected that production in heavy engineering units will go up from Rs 280 crores in 1972-73 to Rs 850 crores in 1976-77 — a three-fold increase. This had been possible through a combination of better capacity utilisation, higher productivity, more effective use of working capital, better inventory control management, etc. The order book position in respect of some of the engineering units which was causing concern a few months ago is

becoming satisfactory. The increase in exports and the higher Plan outlay this year has largely helped in this process of recovery.

investment allowance

A word here about the measures introduced in last year's budget seems in order. The offer of an investment allowance at 25 per cent of capital investment to selected industries was certainly a welcome step and would augment resources for replacement of capital assets in those industries. However, instead of restricting this incentive to a few industries, it should be extended to all industries across the board, if need be at a slightly reduced rate to non-priority industries. Reduction in the rates of personal income tax made in the last budget might augment personal savings and perhaps induce consumer demand through increased disposable income in the hands of the public. However, viewed from the need to increase corporate savings and investment, several additional measures need to be taken. The level of corporate taxation in India is among the highest in the world.

At a time of rapid inflation and profit squeeze, the resources available to companies are far too inadequate to undertake any new investments or even expand or modernise existing units. I may refer here to a recent estimate of capital formation in the private industrial sector. The rate of capital formation for the entire private sector, according to this estimate was 4.3 per cent in 1975-76, as against 18.2 per cent in the previous year. Gross fixed investments were lower at Rs 1022 crores in 1975-76 compared to Rs 1048

crores in the previous year, gross savings also showed a similar fall — Rs 870 crores in 1975-76 compared to Rs 1144 crores in 1974-75 and net savings also steeply fell from Rs 558 crores to Rs 249 crores.

Although several factors had combined to create this adverse situation, viz. fall in demand, high operating and inventory costs etc, the impact of taxation has been particularly heavy leading to a steep fall in net savings of the private corporate sector. It is necessary that the levels of corporate tax are reduced in order to enable industry retain more of its profits which can be ploughed back for expansion.

While on the subject of taxation one must also mention the inequity of the capital gains tax during a period of inflation. Very often this tax tends to take away some part of the capital value of the asset and whatever might have been the justification for such a tax at the time of its introduction, it needs to be reviewed in the context of today and suitably modified, so that only real gains are taxed and not illusory gains arising out of inflation. Similarly, surtax

has again proved to be a tax on efficiency since it is related to higher levels of production and profits of a company. Although the government has seen the wisdom in raising the floor level of profit from 10 per cent to 15 per cent for purposes of levying surtax, there is still a case to consider whether at all this tax should be continued in today's high cost of industrial projects.

Second, the capital market continues to remain sluggish and most new floatations do not attract public support and have to be largely underwritten by banks and other institutional agencies. The withdrawal of temporary restrictions on dividends has helped a partial recovery on stock markets but a further positive approach is needed to create greater confidence in the investing public.

Availability of raw materials, inputs and power have shown a general improvement in the past one year. For instance, improved and increasing power availability, availability of saleable steel at 5.8 million tonnes and similar increases in the availability of copper, aluminium, cement, etc., have also been favourable factors in enabling industry to operate at

TABLE II
Production Trends in Industry

Industry	1974	1975
Finished steel (million tonnes)	4.9	5.6
Cement (million tonnes)	14.3	16.2
Fertilisers (million tonnes)	1.4	1.8
Cotton cloth—mill (million metres)	4,316	4,079
Bicycles (millions)	2.5	2.2
Coal (million tonnes)	86.9	98.7
Petroleum products (million tonnes)	19.4	20.2
Electricity (million kwh)	68,212	75,517
Power transformers (000 KVA)	9,002	11,161
Diesel engines (thousands)	115	139

Source: Reserve Bank of India, Annual Report 1975-76.

higher levels of capacity. By and large, one could say that the short term outlook for industrial growth seems favourable, but from a long term point of view there is still considerable amount of improvement to be made both in the overall climate for investment and specific incentives needed for attracting investment in industry.

A major outstanding issue is the phenomenal increase in capital costs of new projects particularly in the core sector comprising mostly capital intensive industries. Since the mid-sixties, the costs of putting up new units have been going up and today the capital costs are at least four to five times higher. The question of financing new projects therefore assumes immediate significance and importance. Such incentives as investment allowance cannot really make up for this order of increase and special measures are called for to attract investment in higher capital cost units as a class.

Marathe report

The Marathe Committee appointed by the government had made certain recommendations in order to attract investment in high capital cost industries. These recommendations need to be implemented without delay after careful consideration and discussion with concerned interest. Additionally, to stimulate private sector investment in the critical industrial sectors, the government may be well advised to devise a total package consisting of the following:

(a) lower interest rates for the first five years, moving gradually to higher interest rates;

(b) remunerative prices which will attract new entre-

preneurs into difficult capital intensive areas;

(c) tax holiday for seven years from the date of commencement of commercial operations for the company which makes these investments; and

(d) relaxation in the norms of debt-equity ratio from the present level of 2:1 to 4:1 in the case of capital intensive core industries.

continuing recession

The recession in demand for several of our consumer durables and engineering goods is still continuing and we do not seem to be anywhere near a breakthrough in tackling this problem. Despite slight improvement in demand particularly for industrial goods and the timely relief provided by increased export demand for some products there seems to be no sign as such of recession receding. It is no exaggeration to say that industry cannot cut its costs further to reduce prices for inducing demand. The only area it could look to for reduction in prices is a lowering of commodity taxes notably central excise.

Over the years excise duties have grown in an unplanned manner and successive budgets have relied heavily upon this source of tax for augmenting the revenues without due consideration to the economic effects. The impact of excise duty on commodities shows wide variation ranging between 25 per cent and 60 per cent depending upon the type of product, tariff rates and the stages of manufacture involved. The appointment of the Jha Committee in the present context of demand recession is therefore a welcome step and one hopes that this high-powered committee will make suitable recommendations for

rationalisation of the indirect tax structure as a whole, particularly with a view to removing the 'cascading' effect of such taxes on industries. Automobiles and engineering goods are among the worst affected by multi-point taxes on inputs and intermediate goods used in processing.

Every response to the problems posed by the decline in demand in various industries must be consistent with the general policy of keeping the price level reasonably stable. Subject to this condition, relative prices would of course need readjustment, often to a higher level in order to maintain production and to enable further investment. This is quite different in quality from a rise in the general level of prices engendered by excessive money supply. The means through which this is done have to vary according to circumstances. I consider this

adjustment to be not only necessary but feasible without creating inflationary pressures in the economy.

One of the areas of our industrial activity needing urgent attention is the modernisation of our traditional industries such as textiles and jute and prevention of sickness in other sectors of industry. The government has no doubt recently announced special programmes under the Technical Development Fund and through IDBI schemes for the rehabilitation and modernisation of selected industries. In my view, in order to make these steps effective, complementary action on wider policy issues need to be taken.

For example, in the case of the textile industry, the controlled cloth scheme or the obligation to reserve a certain portion of spindle production in the case of composite units for supply to weaker sections

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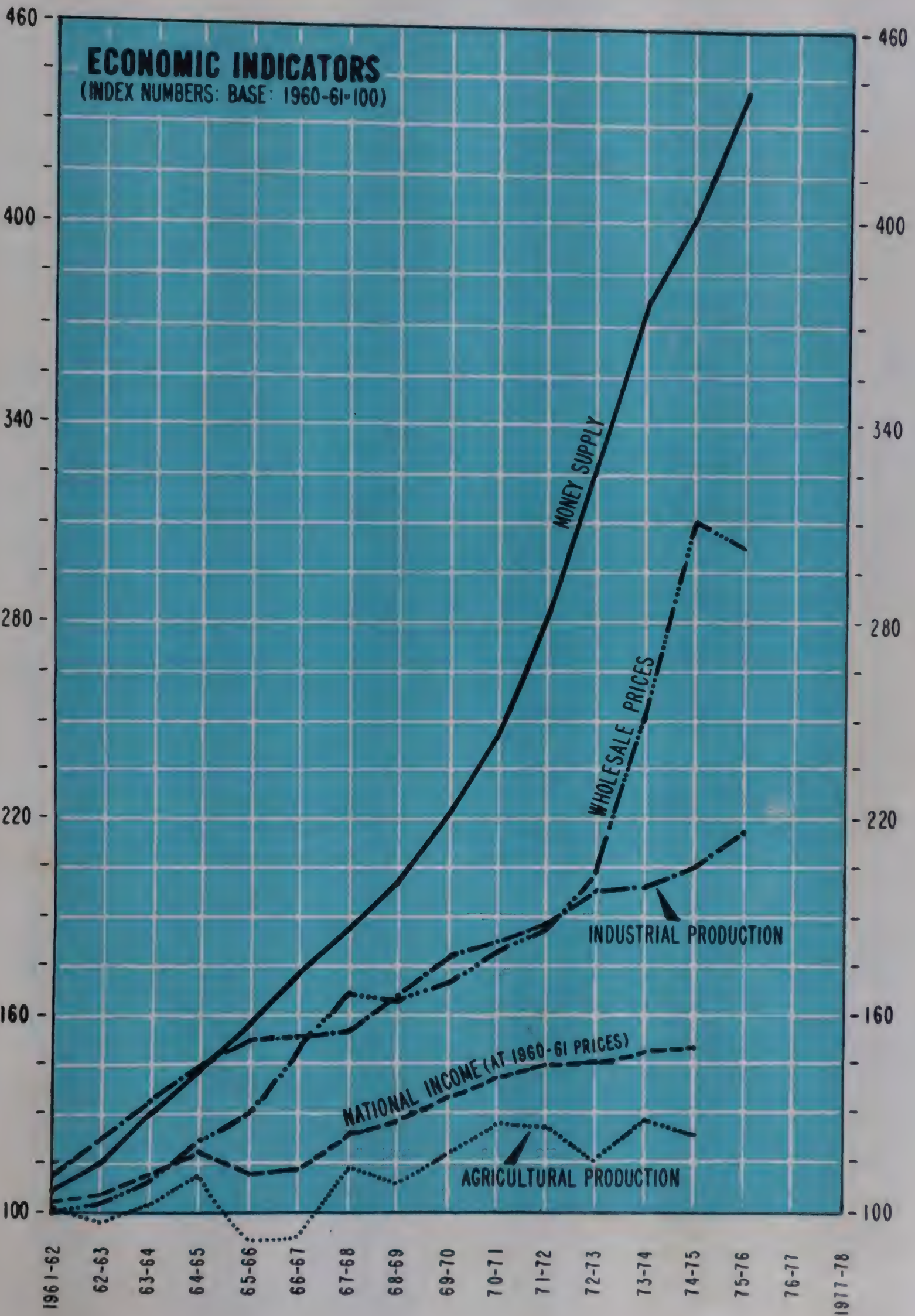
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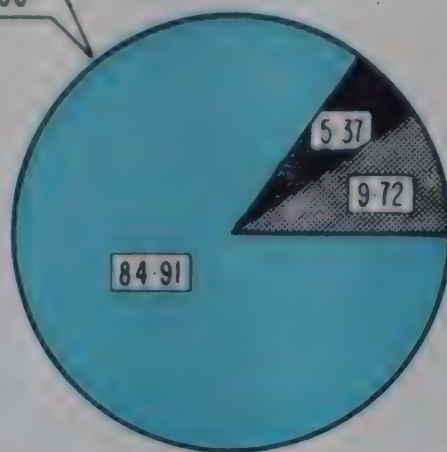
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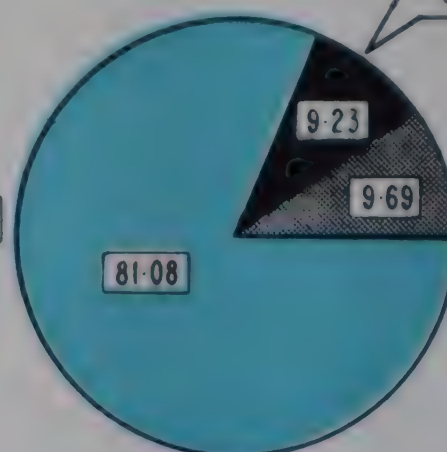


INDEX OF INDUSTRIAL PRODUCTION

BASE: 1960=100



BASE 1970=100



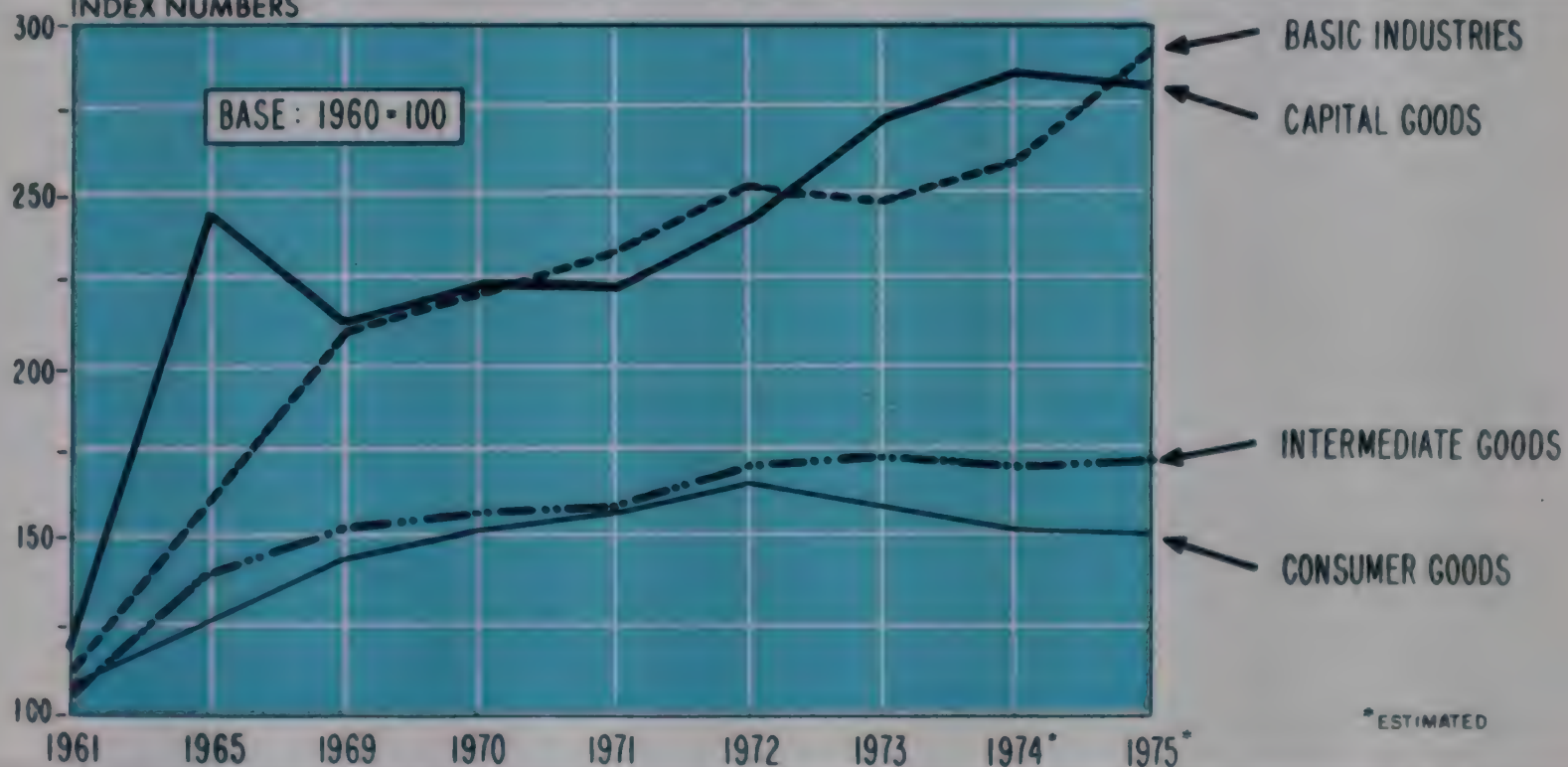
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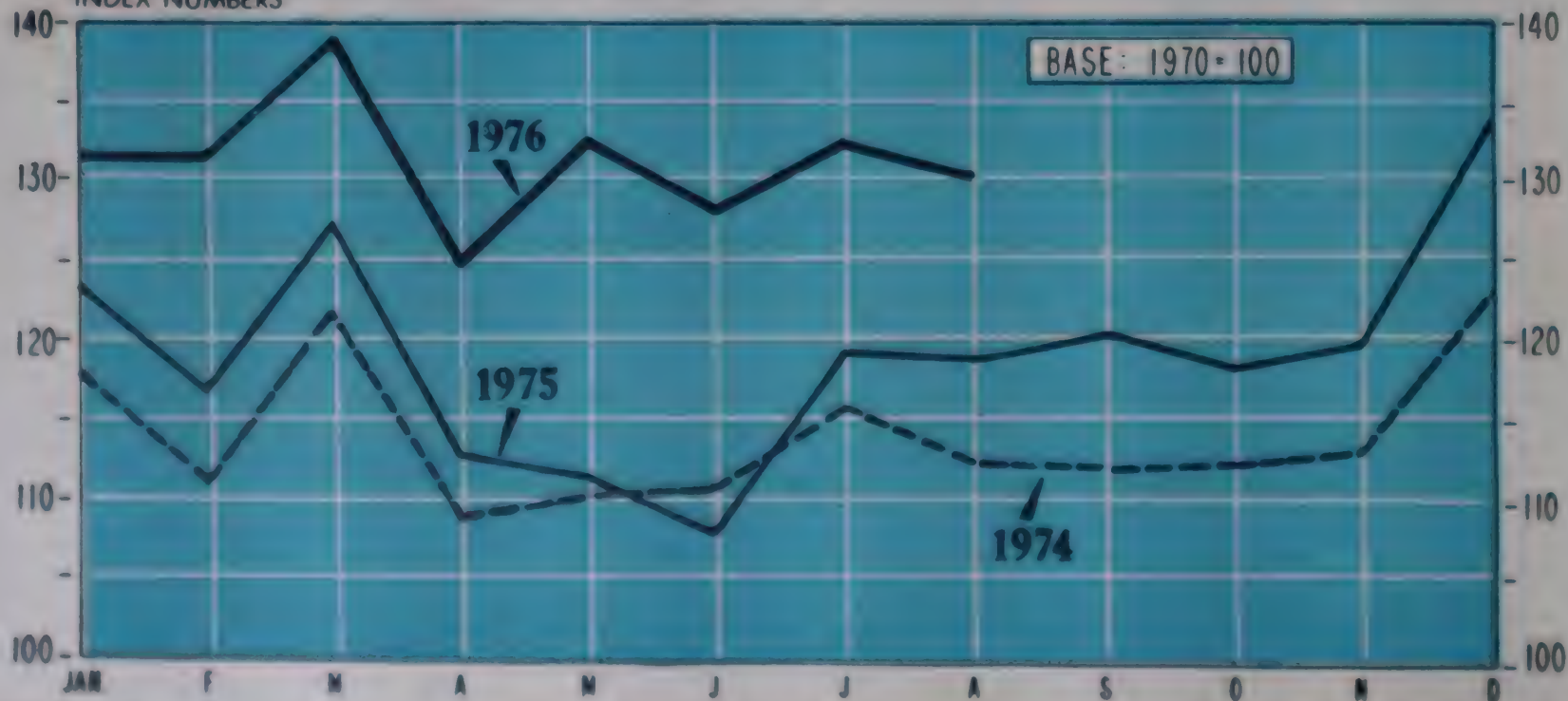
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INDEX NUMBERS



of the textile industry have lowered profitability of textile units thereby leading to stagnant conditions. In the case of the jute industry which is primarily an export-oriented industry, external constraints such as fall in export demand and competition from Bangladesh have been major factors.

change in demand

Nonetheless, not enough attention has been given over the years to anticipate changes in demand for its products and suitably alter its product pattern aiming at the manufacture of higher value added commodities. These are areas which require urgent attention both of the government and industry. In the case of engineering goods sector, we have at least the opportunity of learning from the experience of our traditional sectors of industry, and I would suggest that a long-term strategy be drawn up for renovation, modernisation and other technological improvements for keeping this sector of industry competitive and healthy.

There has been some concern expressed over the recent expansion of money supply and upward movement of prices. If one were to analyse the factors behind the expansion in money supply, one would find that there is no need for getting alarmed over this development. Expansion of money supply with the public was 11 per cent in the current financial year till the first week of November as against 5.9 per cent in the corresponding period of last year. This expansion is mainly attributable to two factors, namely increase in bank credit to the commercial sector (a sizable part of which has gone for financing foodgrain procurement) and increase in net

foreign exchange assets of the banking sector.

From a long-term point of view, if fresh investments to create additional industrial capacity are required, then there will have to be larger injection of bank finance for creation of new assets. One salutary aspect has been that the increase in money supply has taken place during a period of rising production which should act as a mitigating factor for any sharp increase in prices as happened during the previous inflationary period. I am leaving out, of course, the short-term phenomenon of rise in the prices of cotton and edible oil which received the timely attention of the monetary authorities. The point to be noted, however, is that within the general atmosphere of a cautious approach to credit policy, the banking system should be responsive enough to finance genuine needs for investments in industry as also for export purposes.

immediate measures

One of the immediate measures that need to be taken by the government is to productively utilise the sizeable accumulation of foreign exchange resources which stands at nearly Rs 2,100 crores. Liberal imports of capital goods both for creation of additional capacity and for modernisation/renovation of industry would rank as priority number one in this task. Similarly, liberal imports of industrial raw materials, intermediates and spare would also help in improving industrial production. Even from the point of view of stabilising the domestic consumer goods market, the government may consider importing selected

consumer items as a short term measure.

Last but not least, since our industry has already reached a stage of maturity in which it can successfully expand its exports, we should plan systematically from now on for strengthening the export sector of the economy. Export opportunities should not be viewed as providing an answer for distortions in the domestic market. Nor can we count on another commodity boom for a sustained growth in our exports. These fortuitous circumstances are not likely to repeat themselves. We should plan our export strategy by closing technological gaps, strengthening R & D efforts for developing products suited for export markets.

Simultaneously, concerted effort should be made to link up with major international corporations for sub-contracting work in third country pro-

jects or putting up of joint ventures in collaboration with foreign companies in developing countries of Asia and Africa. The availability of abundant skilled manpower, lower labour costs and above all productive capacity available with our industry should help us in this process of joint partnership.

To sum up, Indian economy certainly presents today a reassuring picture of stability and an atmosphere where long-term growth can be planned successfully. The basic economic conditions for this growth have however to be created through greater mobilisation of savings, direction of investment in right channels through appropriate incentives and maintenance of a reasonable measures of price stability. These are the three major areas to which our policy makers would have to address themselves to give the economy the needed thrust for further growth.

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Role of industry in rural development

THERE ARE SO many social welfare and voluntary organisations engaged in the work of rural uplift that the role of industry in rural development is considered by many to be essentially as that of a catalyst. However, can we really remain content with this attitude towards rural development, particularly in the context of the social responsibility that has devolved on all sectors of the population for general development of the economy by all possible means? If the huge population in rural areas dependent on agriculture remain backward, neither industry nor the economy can progress. On the other hand it is likely to result in economic distortions and disparities with grave social consequences. The developed sector like industry cannot continue to develop unless it takes the developing sector like agriculture also along with it.

the remedy

Bringing the industry to rural areas, particularly the backward areas in different states in the country, has been long thought of as a remedy. There are many provisions and specific schemes already existing:

(a) Industries in the rural area have benefited through the scheme of rural industrial projects in selected districts as also from other schemes intended to help the cottage and village industries, handloom industry, etc. The rural areas have also to gain in a big way from the various schemes like the Backward

This article formed part of the background paper prepared by the Federation of Indian Chambers of Commerce and Industry for the seminar held in the capital on December 24, 1976, on the "Role of Industry in Integrated Rural Development."

Area Development Scheme and the Hill and Tribal Area Development Programme.

(b) Small scale industries have been recognised as a priority sector in the development of the rural areas and have been accorded a number of facilities. The general facilities given to them by the government include techno-economic-consultancy assistance, training and testing facilities, provision of necessary raw materials, liberal imports and many other facilities. The growth of the small scale sector over the past ten years have been quite phenomenal and today they account for as much as 38 per cent of the total industrial output in the country.

(c) The central government has launched a special rural industries projects in about 111 districts out of which 92 are backward ones. The main objective of the programme is to supplement farm employment and the achievement of this programme since 1962-63 is presented in the table given alongside.

(d) Between 1962-63 and 1975-76, a total amount of Rs 292 million have been spent on these projects. Dur-

ing the fifth Plan period 57 more new districts are to be taken up. Small units set up under this scheme are eligible for a number of facilities. We have to see how far due extension of this scheme to almost all rural areas is expected to bring about the desired rural transformation and to what extent the outlay on these projects needs to be substantially stepped up.

Adoption of villages by industries has been frequently mentioned as a method of helping agricultural development. The experience gained so far with a few industries having adopted villages reveal the following:

(a) Industries entering into rural areas for agricultural development may cause exag-

An FICCI Review

gerated expectations which may not always be fulfilled.

(b) The tendency for local interest to continue only as long as the involvement of industry continues is not conducive to durable development.

(c) Programmes which do not contribute to productivity and production and to significant increase in income are not likely to have an impact, although these may be in demand.

(d) Involvement of industries from outside in agricultural development without the active support of the local organisation and leadership is likely to cause serious problems and impediments.

(e) Expertise available in industries, if extended to the

Physical Achievements during 1974-75

Item	Achievements since 1962-63			
	Upto March 1972-73 (Revised)	Upto March 1973-74	During 1974-75	Upto 1974-75
1. No. of Units assisted (cumulative)	37,278	48,206	15,372	63,578
2. Investment (cumulative) (Rs in crores)				
(i) Fixed	15.63	24.67	14.25	30.92
(ii) Working	19.42	25.40	10.94	36.34
(iii) Total	35.05	50.07	25.19	75.26
3. Gross of production (Rs in crores) during the year	50.27	70.27	—	96.43
4. Employment generated (No. of persons) (cumulative)	1,63,488	2,07,136	77,052	2,84,188

rural areas to improve agricultural productivity would be welcome. This applies to technology, organisation and management.

In recent years, a vast number of people who had been pursuing their traditional occupation for years have been forced either to give up these occupations and join the rank of landless labourers in the countryside, or else, migrate to urban areas to become factory hands adding to the problem of urbanisation. This is a phenomenon which has been noticed in most developing countries, but the problem is more acute in this country, especially because of the large numbers involved. It is, therefore, necessary that there should be specific programmes designed to help these people to modernise their techniques and face the challenges of the technological changes affecting

modern industrial economy.

The sectors of industries in which they can be settled are those based on available raw materials, skill and local demand. There is a need for specific programme to set up industries utilising modern technology, processes and skills which would largely cater for local demand. A programme, therefore, should be primarily designed, on the one hand, to help the existing rural technicians/artisans to modernise their techniques of production and, on the other, to help new entrepreneurs in the rural areas to establish industries and services which would meet the rural requirements.

Extension of industries from urban to rural areas will go a long way in preventing the brain drain from rural areas to urban areas and thus making available to the agricultural sector capable entre-

preneurs who have the ambition and ability to modernise agriculture.

level of sophistication

Thanks to the application of modern technical processes as well as management concepts and practices, industries in India have been able to come to a sufficiently high level of sophistication. It is a moot question whether they can utilise their expertise in management technology to increase agricultural production by reorganising the system of production and utilising scientific measures and modern technology in modernising agriculture as well.

Some of the constraints which had held back progress in agriculture such as lack of organisation and management of resources can be removed by industry with their sophisticated skills and through introduction of systems approach to agricultural enterprises. Besides, if modern techniques and scientific measures can be utilised, modernisation of Indian agriculture and its transformation from the traditional way of operation, into a business like operation can no longer be considered to be a dream. Industrial organizations can render effective services in a number of directions such as training of small entrepreneurs, provision of marketing facilities for their products and helping the process of technology transfer from urban to the rural area.

In the rural areas there is a large number of operational holdings scattered over nearly half a million villages with varied agro-climatic conditions. This makes it difficult for the application of any technology available to agriculture uniformly. It is, therefore, necessary for sys-

tems approach to be developed for the selection and application of appropriate technology supported by effective steps in improving organisation and management. It is in this field that industry can contribute significantly to the development of agriculture.

There is scope for extension of the agro-based industries and for developing systems approach to benefit the large number of farmers who are either producing or supplying the raw materials such as sugarcane, cotton, jute, etc or are utilising the products of these industries in agriculture such as fertilizer, pesticides agricultural equipment etc. Vertical integration of agro-industries with active involvement of farmers would help the industrialisation of agriculture in a large way.

agricultural problems

A number of agricultural problems could receive priority in research and development activities of industries. Drudgery-reducing and labour productivity increasing equipment, such as rice transplanting equipment, bullock carts, gobar gas plants, cheap refrigeration in rural areas etc, could receive priority attention in research and development activities of appropriate industries. It is necessary that industries are alive to problems which have impact on rapid modernisation of agriculture.

The role of rural industries may not be restricted to supplementing agricultural occupation only. Industrial acculturation should be conceived more as a tool for drawing out the under employed agricultural labour and increasing productivity in general. Also it needs to be remembered that rural industry need not

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always small. It will be desirable to extend the coverage of rural industries to include even some large scale industries like sugar, paper, cement, food processing, etc. The employment potential in these industries should be assessed carefully taking into account the amount of employment they will create in the agricultural sector by paving the way for effective utilisation of local resources. Spatial dispersal of these industries, besides inducing and supporting the modernisation of agriculture, would also speed up technological changes. Greater accent needs to be placed on industries like fertilizer and food processing that form the foundation for prosperous agriculture.

Dispersal of industries has been sought to be achieved

through the area development schemes. Out of 334 districts in the country, 246 or more than two thirds of the total districts have been made eligible for concessional finance, relief in income tax, etc. About 102 districts or more than one third of the total districts have been declared most backward and the units coming up in these areas have been given a capital subsidy of 15 per cent. Since the inception of the scheme in 1972, a total of a eight crore rupees have been dispersed in individual units. However, the total budget provision on this head has never been completely utilised so far. There seem to be some procedural difficulties in getting this subsidy. This should be looked into and remedied. The utilisation of this subsidy fund has also been uneven among the

various states. It is noted that backward areas in relatively forward states have had an edge in attracting industries. It is a moot question as to whether any modification in this scheme could ensure that the relatively backward states are able to get a comparable share of the subsidy fund.

Industrialisation in the rural areas would also very much depend upon certain other infrastructure facilities such as the availability of power. So far the Rural Electrification Corporation has launched 324 schemes in the rural industries project districts covering about 29,297 villages. It is envisaged that about 41,000 new small units would be benefited by these schemes. Although, extension of these schemes to all the

villages would be very much desirable, to begin with we may have to adhere to the growth centre concept. Potential growth centres will have to be identified on the basis of detailed and original studies. It will be good to also have a blueprint of the pattern of industries that might come up in these areas and fruitfully exploit and develop the resources, human and physical that are locally available. The various financial institutions in the country have already done some regional studies in this respect. It may be also desirable that they come out with schemes of financial assistance intended to facilitate the growth of industries identified by them on the basis of feasibility reports that are available with them.

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PROFILE

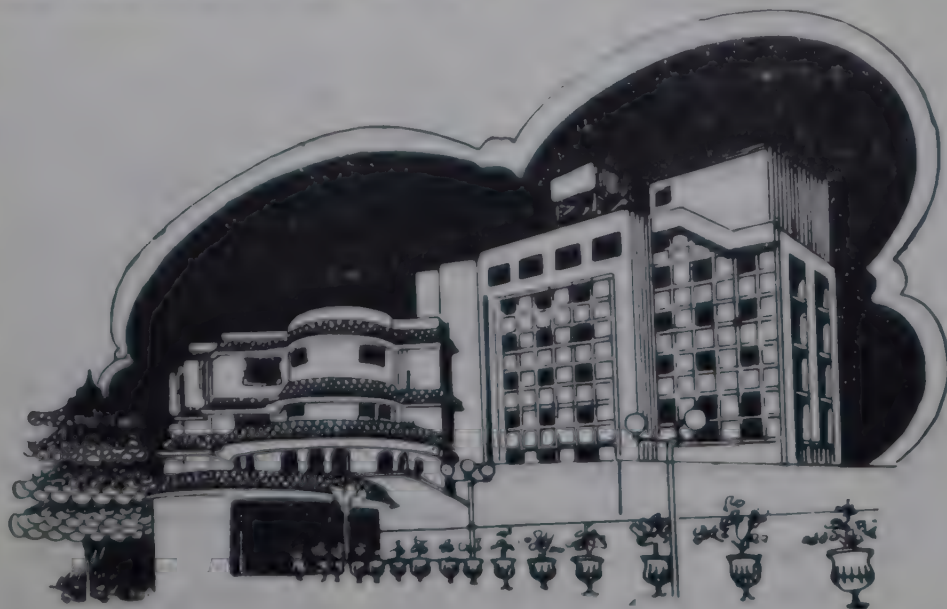
	June 1969	December 1975	Average Annual Growth (%)
1. Branches (No.)	240	773	
— (Of which Rural & Semi-urban)	(99)	(493)	
2. Deposits (Rs. crores)	130.07	534.97	24.30
3. Advances (Rs. crores)	74.02	363.19	27.70
— Of which to			
A. Priority Sectors (Rs. crores)	24.55	174.98	35.30
i) Exports	16.03	44.97	17.10
ii) Other Priority & Neglected Sectors	8.52	130.01	52.20
4. %Share in Total Advances (3A : 3)	33.17	48.18	
i) (3A (i) : 3)	21.66	12.38	
ii) (3A (ii) : 3)	11.51	35.80	



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Let the 20 - Point Programme be our Charter.

ARIES

Index Numbers of Industrial Production
(1970 = 100)

Item	1971	1972	1973	1974	1975	1976
I. General Index Crude						
January	104.1	111.8	114.9	117.9	123.1	131.1
February	100.5	109.7	108.4	110.7	116.9	131.5
March	110.6	117.0	117.5	121.8	127.4	138.7
April	101.8	105.2	104.3	109.0	113.0	125.1
May	100.2	107.2	107.2	110.2	111.7	132.4
June	101.8	106.7	108.0	110.9	108.3	127.3
July	104.3	108.3	110.6	116.2	119.3	132.8
August	102.4	109.9	113.9	112.7	119.0	128.1
September	102.5	109.1	111.7	112.3	120.2	127.7
October	101.2	107.8	107.1	112.6	118.3	
November	106.8	112.1	117.9	113.7	119.9	
December	114.4	117.8	122.6	123.1	133.8	
Annual Average	104.2	110.2	112.0	114.3	119.3	
II. Mining and Quarrying						
January	103.6	108.7	113.0	117.0	137.0	145.0
February	100.5	104.7	108.0	109.0	128.0	150.0
March	106.6	108.7	112.0	115.0	138.0	159.0
April	101.5	105.7	107.0	108.0	125.0	132.0
May	101.5	105.7	107.0	111.0	126.0	132.0
June	98.4	101.6	102.0	108.0	119.0	129.0
July	97.4	100.6	101.0	111.0	121.0	130.0
August	97.4	99.6	101.0	110.0	119.0	126.0
September	95.4	101.6	99.0	112.0	121.0	124.0
October	95.4	103.7	94.0	113.0	123.0	
November	103.6	105.7	106.0	117.0	128.0	
December	110.8	113.7	113.0	126.0	144.0	
Annual Average	101.0	105.0	105.2	113.1	127.4	
III. Manufacturing						
January	104.0	111.5	114.8	116.6	120.0	126.0
February	100.7	110.1	108.8	109.8	114.8	126.8
March	111.2	117.6	118.4	121.6	125.0	132.9
April	101.3	103.6	103.2	107.6	109.4	120.5
May	99.2	106.1	106.5	108.8	107.5	128.8
June	101.8	106.2	108.4	110.1	104.8	123.9
July	104.8	108.4	110.6	116.2	117.0	130.1
August	102.4	110.3	114.6	111.4	116.6	125.7
September	103.0	109.2	112.3	110.4	118.0	125.2
October	101.0	107.3	107.2	111.0	114.6	
November	106.7	112.7	118.5	111.7	116.1	
December	114.7	118.4	122.7	121.3	129.3	
Annual Average	104.2	110.1	112.2	113.0	116.1	
IV. Electricity						
January	104.8	118.1	118.2	130.3	136.2	161.8
February	198.8	112.3	104.5	120.8	124.5	152.9
March	108.7	120.6	115.0	131.0	137.9	167.7
April	107.0	118.9	111.4	122.7	131.8	157.7
May	107.0	119.3	113.6	121.4	133.3	164.1
June	104.9	117.0	110.6	121.3	127.1	155.1
July	107.4	115.2	121.1	122.1	137.3	159.6

—Contd.

Index Numbers of Industrial Production—Contd.
(1970=100)

Item	1971	1972	1973	1974	1975	1976
August	106.9	116.8	120.9	126.7	140.9	151.9
September	105.7	115.7	119.8	129.4	138.3	154.0
October	109.2	117.0	119.8	126.2	145.2	
November	111.0	114.4	125.0	128.4	144.8	
December	115.2	116.8	132.2	135.8	158.6	
Annual Average	107.2	116.8	117.7	126.3	138.0	

Note : All figures are provisional.

Source : Central Statistical Organisation.

Delhi's Achievements in the Year of Fulfilment

Decline in Prices

Price rise arrested; negative rate of inflation achieved; model public distribution set-up; people's cloth being sold through 253 Coops, and 2251 Fair Price Shops in urban and rural areas.

Home for the Homeless

Land for the Landless

4136 acres of agricultural land distributed to 4538 Harijan and poor landless families. 9000 house sites distributed to poor and Harijan homeless. Rs. 18 lakhs distributed to Harijans, as housing subsidy.

Apprenticeship

3529 youngmen placed as apprentices in industries as against the target of 3500.

Public enemies on the run

2259 raids on dishonest traders. Suppressed transactions of Rs. 16 crores detected. 14,000 raids against hoarders, black-marketeers.

Relief for Students

Book Banks in 853 schools, stationery at cheaper rates; hostel food costs less; 12 point programme for school improvement. Free text books to all primary students. Rs. 8 lakhs spent in providing school uniforms to the poor students. Additional Rs. 8 lakhs this year.

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Production Picks up

600 industrial sheds constructed, Rs. 3.5 crores distributed as loan to industries. Vegetable cultivation increased from 16.20 thousand hectares in 1972 to 19.72 thousand hectares in 1976. Multiple cropping popularised. Marginal farmers and labourers' development agency helping the weakest farmers.

Beautification

City area has a new look. Jama Masjid complex re-developed-beautified. Subzi Mandi shifted to Azad Pur. 200 non-conforming industries shifted to the conforming area. 20 resettlement colonies, with 50,000 plots having basic amenities, set up. New hopes of better life and opportunities for the poor and the weakest. To make Delhi greener 10 lakh trees are being planted of which 6 lakhs have already been planted.

Rural Development

50 villages to benefit from integrated programme under cleanliness, prohibition and Family Planning in the first quarter of 1976-77. All villages to come under its ambit by the end of 1976-77.

Delhi tops in Family Planning

Against the national average of 16.1 per cent, Delhi has covered 58.6 per cent couples in the pro-creative age-group by the end of March, 1976. This percentage is higher than the Fifth Plan Target of 38 per cent. As a result of an intensified drive 70,000 more sterilisations have so far been done this year.

ISSUED BY THE DIRECTORATE OF INFORMATION & PUBLICITY : DELHI ADMINISTRATION : DELHI

Output of Selected Industries During April-October 1976

vis-a-vis April-October 1975

Sl. No.	Industry	Weight 1970=100	A/C Unit	Cumulative Production		Percentage change in
				April—October		April—October '76
				1975	1976	April—October '75
1.	Coal (incl. lignite)	6.0427	Th. Tonnes	55086	56813	+ 3.1
2.	Crude petroleum	1.5460	-do-	4870	4904	+ 0.7
3.	Pig iron (main steel plants)	0.7582	-do-	2777	3405	+22.6
4.	Saleable steel (main steel plants)	3.8774	-do-	3128	3893	+24.5
5.	Aluminium	0.5496	-do-	99.5	123.5	+24.1
6.	Blister copper	0.0095	Tonnes	11114	10781	— 3.0
7.	Zinc	—	-do-	15025	14505	— 3.5
8.	Lead	—	-do-	2799	2687	— 4.0
9.	Sugar	2.7900	Th. Tonnes	953	625	—34.4
10.	Vanaspati	0.6760	-do-	242.9	283.8	+16.8
11.	Cotton yarn	6.2438	Mill. Kgs.	564	598	+ 6.0
12.	Cotton cloth (mill sector)	5.3407	Mill. Mtrs.	2299	2352	+ 2.3
13.	Jute manufactures	2.7112	Th. Tonnes	743	649	—12.7
14.	Newsprint	0.0210	Tonnes	29718	32933	+10.8
15.	Nitrogenous fertilisers (N)	0.8662	Th. Tonnes	783.3	1053.8	+34.5
16.	Phosphatic fertilisers (P ₂ O ₅)	0.5192	-do-	174.7	259.0	+48.3
17.	Petroleum products	1.6200	-do-	12034	12310	+ 2.3
18.	Cement	1.1700	-do-	9437	10615	+12.5
19.	Commercial vehicles	1.2499	Nos.	24272	26402	+ 8.8
20.	Cars	0.4936	-do-	12519	19159	+53.0
21.	Jeeps	0.1448	-do-	5633	4420	—21.5
22.	Motorcycles	0.1093	-do-	39750	42032	+ 5.7
23.	Scooters	0.1095	Nos.	58699	89608	+52.7
24.	Mopeds/Scooterettes		-do-	19193	20362	+ 6.1
25.	Auto rickshaws	0.0296	-do-	7161	10978	+53.3
26.	Diesel engines (vehicular)	0.452	-do-	2325	2709	+16.5
27.	Railway wagons	1.1282	-do-	6771	6302	— 6.9
28.	Electricity generated	9.2300	Mill. KWH	43813	50845	+16.1

Capacity and Production Targets for Selected Industries

Industry	Unit	1973-74	1978-79		Industry	Unit	1973-74	1978-79	
		Actual production	Capacity target	Production target			Actual production	Capacity target	Production target
Mining					Polystyrene	„	14.40	17.50	13.00
Coal	Mil. tonnes	79.00	—	124.00	Polypropylene	„	—	30.00	15.00
Lignite	„	3.30	—	4.50	Synthetic rubbers	„	23.30	50.00	40.00
Petroleum crude	„	7.20	14.18	14.18	Synthetic fibres and intermediates				
Iron ore	„	35.70	—	56.00					
Basic metals					D.M.T.	„	4.20	24.00	24.00
Pig iron for sale	„	1.59	2.26	2.50	Caprolactum	„	—	20.00	20.00
Steel ingots	„	6.32	16.40	11.32	Viscose filament yarn	„	37.00	42.70	40.00
Finished steel	„	4.89	13.02	8.80	Viscose staple fibre	„	62.00	132.50	100.00
Alloy and special steels	000 tonnes	339.00	750.00	570.00	Viscose tyre cord	„	16.90	21.00	20.00
Aluminium	„	147.90	325.00	310.00	Nylon filament yarn	„	11.30	19.20	17.00
Copper	„	12.70	57.00	37.00	Nylon tyre cord and other industrial yarn	„	2.20	9.99	6.00
Zinc	„	20.80	95.00	80.00	Polyester filament yarn and staple fibre	„	15.10	30.10	24.00
Lead	„	2.70	18.00	16.00	Acrylic fibre	„	—	12.00	6.00
Metal products					Drugs and pharmaceuticals				
Steel castings	000 tonnes	67.00	200.00	100.00	Antibiotics-penicillin	MMU	247.50	575.00	520.00
Steel forgings	„	97.30	250.00	130.00	Streptomycin	tonnes	179.85	49.00	400.00
Non-metallic mineral products					Anti-diabetes drugs (insulin)	MMU	898.00	100.00	1200.00
Cement	Mil. tonnes	14.67	23.50	20.80	Anti-dysentery drugs	tonnes	72.80	539.40	450.00
Refractories	000 tonnes	710.00	1745.00	1020.00	Anti-leprosy drugs	„	8.70	25.60	22.00
Petroleum products					Anti-malarial drugs	Tonnes	22.86	303.00	200.00
(including lubricants)	Mil. tonnes	19.70	31.50	27.00	Anti-pyretics and analgesics	„	977.10	3055.00	2000.00
Basic chemicals					Anti-tuberculosis drugs	„	594.00	1702.00	1050.00
Sulphuric acid	000 tonnes	1343.00	3804.00	2700.00	Sulpha drugs	„	1297.00	2730.00	1750.00
Caustic soda	„	419.00	755.40	610.00	Vitamin-A	MMU	48.30	60.00	54.00
Soda ash	„	480.00	999.00	710.00	Other vitamins	tonnes	—	665.00	500.00
Methanol	„	23.00	84.50	50.00	Food products				
Industrial oxygen	m.c.m.	60.70	130.00	100.00	Sugar	Mill. tonnes	3.95	5.40	5.40
Agricultural chemicals					Vanaspati	000 tonnes	449.00	1350.00	610.00
Fertilisers (N)	000 tonnes	1058.00	4728.00	2900.00	Textiles				
Fertilisers (P ₂ O ₅)	„	319.00	1311.00	770.00	Cotton yarn	Mill. Kgs.	1000.00	—	1150.00
Pesticides (technical materials)	„	29.00	70.00	60.00	Cotton cloth (mill sector)	Mill. Metres	4083.00	—	4800.00
B.H.C.	„	21.00	28.90	28.00	Cotton cloth (decentralised sector)	„	3863.00	—	4700.00
D.D.T.	„	3.90	4.20	4.40	Art silk fabrics	„	840.00	—	1435.00
Thermo-plastics and synthetic rubbers					Jute manufactures	000 tonnes	1074.00	1350.00	1280.00
L.D. polyethylene	000 tonnes	28.20	13.00	60.00					
H.D. polyethylene	„	22.90	30.00	27.00					
P.V.C.	„	46.40	71.10	55.00					

—Contd.

Capacity and Production Targets for Selected Industries—(Contd.)

Industry	Unit	1973-74			1978-79			Industry	Unit	1973-74			1978-79		
		Actual production	Capacity target	Production target	Actual production	Capacity target	Production target			Actual production	Capacity target	Production target			
Paper and paper products					Rail and water transport										
Paper and paper board	'000 tonnes	776.00	1300.00	1050.00	Diesel locomotives	Nos.	145	160	160						
Newsprint	"	48.70	155.00	80.00	Electric locomotives	"	50	80	70						
Leather and rubber goods					Railway coaches	"	1308	1500	1200						
Leather footwear	Mill. pairs	14.60	24.60	18.00	Railway wagons	'000 Nos.	12.2	26.9	15						
Rubber footwear	"	38.80	57.00	50.00	Ship building	'000 GRT	30.00	180.2	130.2						
Bicycle tyres	Mill. Nos.	24.03	34.00	30.00	Road transport										
Automobile tyres	"	4.66	9.90	8.00	Commercial vehicles	'000 Nos.	42.90	64	60						
Other consumer products					Passenger cars	"	44.20	47.4	32						
Soap	'000 tonnes	234.00	273.00	320.00	Jeeps	"	12.40	13.00	10.00						
Synthetic detergents	"	72.00	235.00	125.00	Scooters, motor cycles and mopeds	"	150.70	600	320						
Industrial machinery					Bicycles	"	2575	4019	3000						
Machine tools	Rs. million	673.00	1700.00	1300.00	Mechanical components and consumer durables										
Mining machinery (including coal machinery)	"	62.30	300.00	200.00	Ball and roller bearings	Mill. Nos.	24.4	40	34						
Metallurgical machinery	"	260.00	600.00	380.00	Typewriters	'000 Nos.	33.70	74.4	60						
Cement machinery	"	81.00	260.00	150.00	Sewing machines	"	257	533.5	415						
Chemical and pharmaceutical machinery	"	313.00	850.00	650.00	Electrical components and consumer durables										
Sugar machinery	"	223.00	450.00	400.00	Conductors (A.C.S.R. and A.A.)	'000 tonnes	46.40	113.12	90.00						
Rubber machinery	"	14.50	125.00	100.00	Cables (PVC and VIR)	Million metres	551.00	1281.00	550.00						
Paper and pulp machinery	"	51.70	400.00	280.00	Dry batteries	Million Nos.	654.00	1291.00	800.00						
Printing machinery	"	9.30	126.00	60.00	Storage batteries	"	1.29	2.20	1.50						
Cotton textile machinery	"	458.00	2130.00	1300.00	G.L.S. Lamps	"	120.60	200.00	180.00						
Boilers (power and industrial)	"	825.10	—	1750.00	Fluorescent tubes	'000 Nos.	12.70	22.00	20.00						
Electric power equipment					Electric fans	"	2118.00	3200.00	2500.00						
Steam turbines	Mill. K.W.	1.40	—	2.50	Electronics										
Hydro turbines	"	0.70	—	1.40	Consumer electronics	Rs. million	615.00	—	1990.00						
Transformers	Mill. KVA	12.42	31.00	20.00	Medical electronics	"	40.00	—	140.00						
Motors	Mill. H.P.	3.24	6.7	4.50	Instruments	"	118.00	—	460.00						
Construction machinery					Computers and calculators	"	95.00	—	510.00						
Crawler tractors	Nos.	278	600	450	Control and industrial electronics	"	70.00	—	300.00						
Dumpers and scrapers	"	215	788	450	Components	"	550.00	—	1300.00						
Road rollers	"	1566	1900	1200	Materials	"	65.00	—	315.00						
Agricultural machinery					Telemetry and two-way communications	"	64.00	—	138.00						
Tractors	'000 Nos.	24.2	70	55											

Source: Fifth Five-Year Plan.

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Gateway to growth

S. P. Chopra

More than two decades ago—on April 14, 1956, to be precise—the late prime minister Jawaharlal Nehru had said while addressing the Conference of the All-India Manufacturers' Organisation in New Delhi: "I should imagine that two tests of the progress of a nation are : how much iron and steel it is producing and how much power it is producing. I do not want your lists of factories and other things; if you tell me how much power, hydroelectric or thermal, it has been producing, then I can immediately form an idea of its industrial development. So also with iron and steel. Now you know that we are pushing ahead as fast as we can with iron and steel, with three new factories. And our Commerce and Industry minister indicated the other day in Lok Sabha that after this five-year Plan, he wants to double or treble the output of iron and steel in India".

spectacular advances

Our country has come a long way in the establishment of basic industries. While in 1956, the total production of steel ingots was a little more than a million tonnes, it was more than eight million tonnes in 1976. Equally spectacular has been the advance in power generation whose capacity has multiplied almost eight times from 3.4 million KW in 1955-56 to about 24.4 million KW in 1976-77. Cement production has risen from 4.3 million tonnes in 1955-56 to about 18.5 million tonnes in 1976. And the story is no different in the case of aluminium, coal and iron ore.

But the demand for the basic industries has also grown in the past 20 years. In 1973 and 1974—two of the abnormal years in this country's recent economic history—there were severe shortages of power, steel, coal and even aluminium. Failure of the mon-

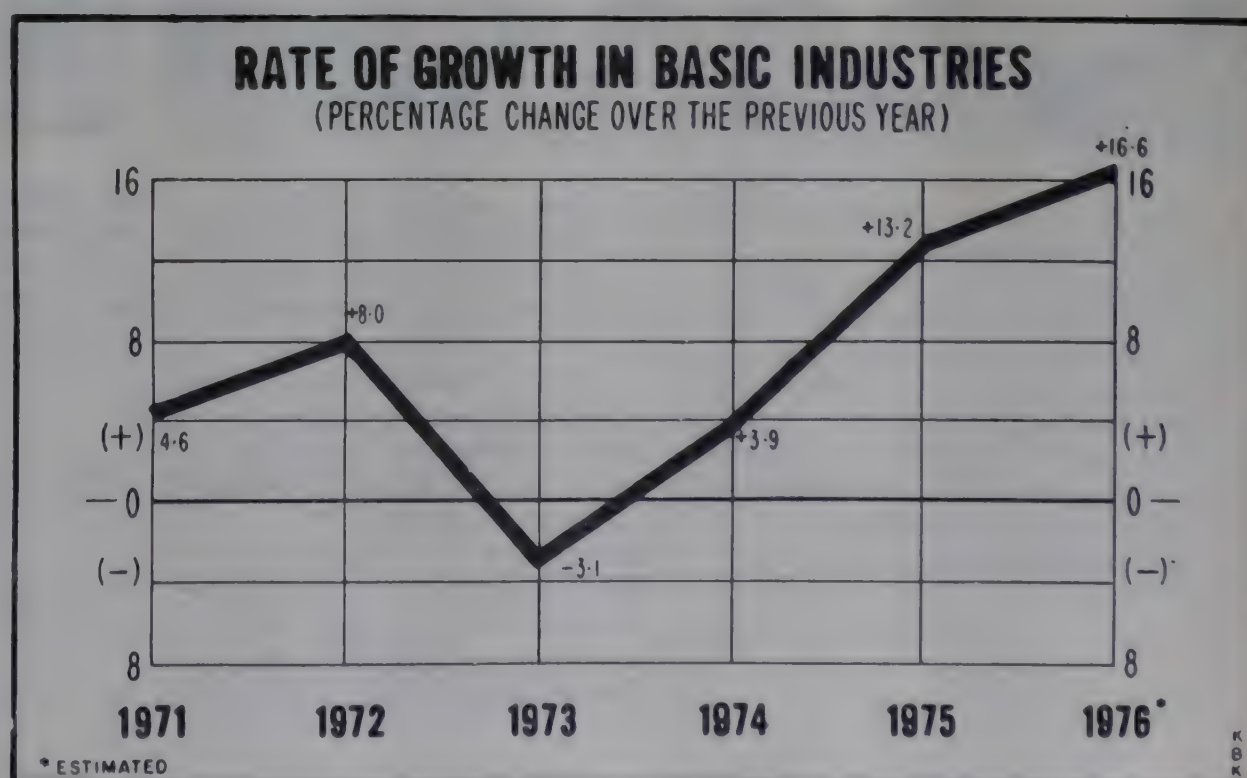
soons reduced the output of hydro-electricity which in turn had an unfavourable impact on industrial and agricultural production (through a fall in the availability of irrigation facilities) and transportation. With improved weather conditions in 1975 and 1976 and also because of the sobering climate created in the country in the wake of the emergency in June 1975, the performance of all the basic industries has improved resulting in surpluses in some sectors. In the case of the iron and steel industry, for example, there is a surplus in certain categories which is currently being exported.

The recent estimates show that the value of exports of iron and steel in 1976 may be more than Rs 200 crores. This is indeed a disconcerting development because obviously this is an open admission of the fact that the country has failed in fabricating all the steel it is capable of producing. The

steel plants were set up in the first instance to encourage the establishment of capital goods industries and not the export of iron and steel.

The White Paper on steel released by the ministry of Steel and Mines earlier this year envisaged the setting up of new steel plants so as to attain the capacity of 75 million tonnes at the turn of the current century. There is no doubt that this is a laudable objective but it will be essential to establish such units as can use so much steel for purposes of encouraging mother industries and stimulating exports of engineering products instead of iron and steel.

Despite substantial increase in the generation of power, some of the states, such as Maharashtra, Karnataka, and Andhra Pradesh were experiencing shortages at the time of writing. The Planning Commission has taken a wise step in allocating between



Rs 400 crores and Rs 500 crores for taking advance action in the establishment of no less than 32 power plants. Most of these units will be completed in the sixth and the seventh five-year Plan periods.

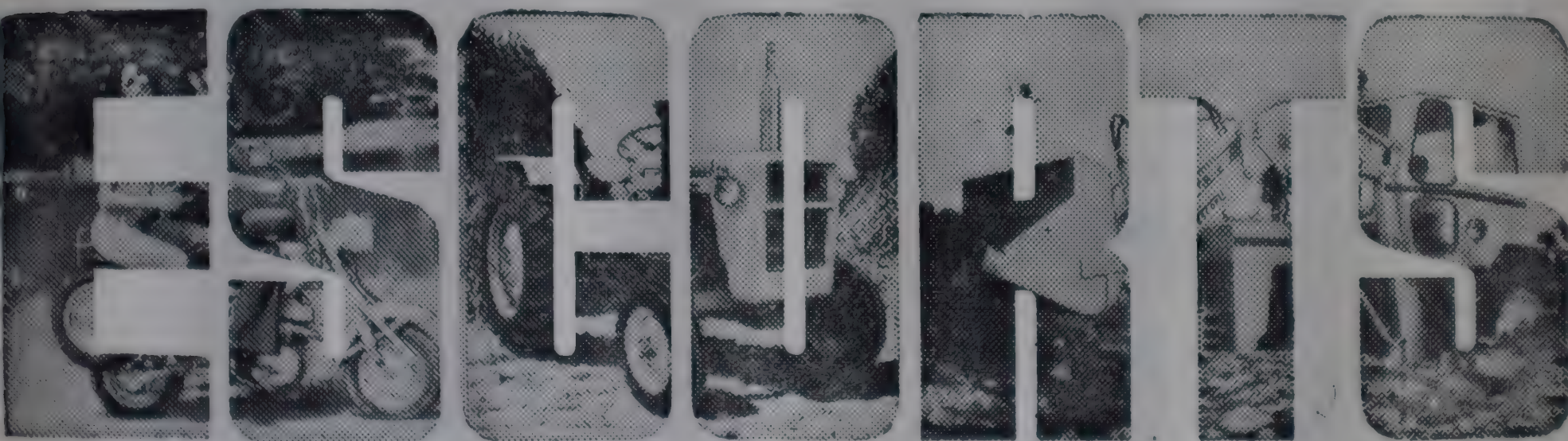
Assessing the growth in demand for power in 1983-84, the Planning Commission reached the conclusion that the probable shortage in that year would be felt at peak hours. Hence 60 per cent of the new plants sanctioned were hydro while the remaining were thermal ones. For increasing output at peak hours, the hydro plants are the most suitable. However, the dependence of these plants on the monsoons was a big limiting factor and hence for a regular flow of power increased stress was being put on thermal plants. The easy availability of coal in this country was a great asset in the realisation of this

objective. The output of coal in 1976 at more than 100 million tonnes accompanied by its reorganisation in recent years indicates that it would not be difficult to achieve the target of production of 124 million tonnes in 1978-79.

In the case of cement, the output increased by more than 12 per cent in April-October 1976 over the corresponding period in 1975. It is estimated that total production in 1976 will exceed 18 million tonnes as against nearly 16 million tonnes in 1975. The present installed capacity in this industry is more than 21 million tonnes and there is every possibility of attaining the target of 21 million tonnes capacity in 1978-79. Increased production of cement and steel can be helpful in laying the foundation for rapid progress in capital goods industries, housing and various infrastructural facilities.

The cement industry has suffered from low profitability in recent years because of the inadequate sale price for cement fixed by the government. And revision of the price only once a year even when escalation in costs took place throughout the year marred the financial performance of many a unit. It is time that the government looked into this problem keeping in view the future growth of this industry. Perhaps the entry of the public sector in a big way will force the government to be realistic in this regard.

All in all, the basic industries have a good record in the sense that their rate of growth has been the highest among the four major groups. Even in 1976, its increase in production at more than 16 per cent surpassed the record of all the other groups such as the capital goods, intermediate goods and consumer goods industries.



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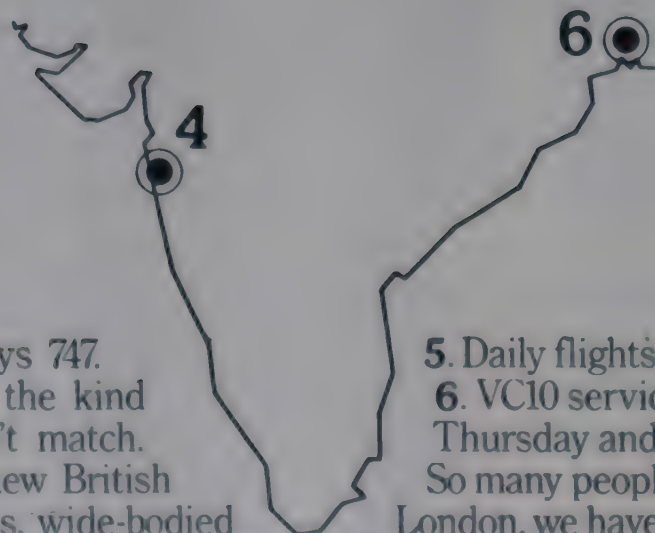
Bombay Calcutta Madras

Production in Basic Industries

Industry	Weight (1970=100)	Unit	Production during					Percentage change		
			1971-72	1972-73	1973-74	1974-75	1975-76 (Prov.)	1973-74	1974-75	1975-76
								1972-73	1973-74	1974-75
Coal (incl. lignite)	6.0427	Th. Tonnes	76272	80215	81835	91573	102660	+2.0	+11.9	+12.1
Petroleum crude	1.5460	"	7298	7322	7188	7683	8849	-1.8	+6.9	+10.0
Iron ore	0.6638	"	34683	35679	35732	37026	41500	+0.1	+3.6	+12.1
Manganese ore	0.1869	"	1797	1605	1419	1524	1428	-11.6	+7.4	-6.3
Limestone	0.4555	"	24727	25724	25969	25429	26047	+1.0	-2.1	+2.4
Gold	0.1153	Kgs.	3540	3319	3225	3076	2917	-2.8	-4.6	-5.2
Nitrogenous fertilizers (N)	0.8662	Th. Tonnes	952	1060	1060	1185	1535	—	+11.8	+29.1
Phosphatic fertilizers (P ₂ O ₅)	0.5192	"	278	326	323	327	320	-0.9	+1.2	-2.1
Caustic soda	0.3156	"	382	395	419	426	470	+6.1	+1.7	+10.3
Soda ash	0.2226	"	489	486	480	516	555	-1.2	+7.5	+7.6
Chlorine liquid	0.0574	"	160	146	143	151	169	-2.1	+5.6	+11.9
Calcium carbide	0.0571	"	69.9	64.2	66.2	66.8	74.3	+3.1	+3.9	+8.0
Sodium hydrosulphite	0.0533	"	5.9	7.1	8.9	8.4	8.5	+25.4	-5.6	+1.2
Sulphuric acid	0.0396	"	1265	1338	1343	1417	1416	+0.4	+5.5	-0.1
Acetic acid	0.0686	"	15.2	16.9	16.8	18.5	22.6	-0.6	+10.1	+22.2
Refractories	0.1964	"	800	779	710	753	729	-8.9	+6.1	-3.2
Glazed tiles	0.4536	"	21.7	25.7	27.9	28.2	29.6	+8.6	+1.1	+5.0
Sheet and plate glass	0.1137	Mill. Sq. Mtr.	19.4	17.3	16.9	12.6	16.4	-2.3	-25.4	+30.2
Cement	1.1700	Th. tonnes	15041	15569	14671	14731	17229	-5.8	-0.4	+17.0
Asbestos cement products	0.4038	"	384	404	422	439	481	-4.5	+4.0	+9.6
Coated abrasives	0.1098	Th. Ream	194	205	225	281	200	+9.8	+24.9	-28.8
Grinding wheels	0.2764	Th. Tonnes	6.8	6.2	7.0	6.5	6.4	+12.9	-7.1	-1.5
Pig Iron (main steel plants)	0.7582	"	6380	7271	6949	7584	8366	-4.4	+9.1	+10.3
Saleable steel (main steel plants)	3.8774	"	4478	4793	4353	4901	5779	-9.2	+12.6	+17.9
Steel castings	0.6125	"	58.7	69.8	66.9	63.7	60.1	-4.2	-4.8	-5.7
Transmission line towers	0.1221	"	59.7	57.8	63.6	66.3	94.2	+10.0	+4.2	+42.1
Heavy structurals	0.3120	"	44.2	49.8	51.2	43.2	48.3	+2.8	-15.6	+11.8
Light & medium structurals	0.1607	"	64.8	59.6	71.4	79.1	84.4	+19.8	+10.8	+6.7
Steel pipes and tubes	0.7164	Th. tonnes	219.4*	315	294	364	360	-6.7	+23.8	-1.1
Seamless tubes	0.0660	"	37.1	36.6	23.3	28.8	36.0	-36.3	+23.6	+25.0
C.I. spun pipes	0.1053	"	205	212	276	287	268	+30.2	+4.0	-6.6
Electrical steel sheets	0.1077	"	28.0*	34.7	27.9	36.7	27.9	-19.6	+31.5	-24.0
Copper (refined)	0.0095	"	8.3	12.4	12.7	12.8	17.1	+2.4	+0.8	+33.6
Copper sheets and circles	0.0943	Tonnes	2756	2923	2750	2315	2207	-5.9	-15.8	-4.7
Brass sheets and circles	0.2218	Th. tonnes	16.1	18.1	13.7	9.6	9.3	-24.3	-29.9	-3.1
Aluminium	0.5496	"	181.5	174.8	147.9	126.6	187.0	-15.4	-14.4	+47.7
Aluminium sheets & circles	0.3616	"	47.6	52.8	52.5	45.1	35.1	-0.6	-14.1	-22.2
Aluminium foils	0.1926	"	5.2	5.5	5.8	5.8	5.7	5.5	—	-1.7
Aluminium rods & sections	0.1928	"	13.3	11.9	11.6	10.5	10.0	-2.5	-9.5	-4.8
Electricity generated	9.2300	Mill. KWH.	60982	64720	66501	70583	79840	+2.8	+6.1	+13.1

*Calendar year figures

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New Power Generation Schemes : 1977-79

States/Schemes	Est. cost (Rs crores)	Benefits MW	Date of commissioning	Allocation suggested in final profile (Rs crores)
Northern Region				
1. Haryana				
Faridabad 3rd unit	18.30	60	1980	14.50
2. Himachal Pradesh				
(i) Binwa Hydel	4.32	6	1980-81	4.00
(ii) Andhra Hydel	9.46	15	1980-81	
(iii) Rongtong	2.58	2	1980-81	
3. Jammu & Kashmir				
(i) Gurez	0.64	0.6	1979-80	1.70
(ii) Improvement to Ganderbal and Upper Sindh	1.20	—	1978-79	
4. Punjab				
(i) Shanon Extension	13.26	50	1978-79	35.78
(ii) Anandpur Sahib	52.40	134	1980-81	
(iii) Mukerian Hydel	75.57	207	1983-84	
(iv) Thein Dam	180.00	480	Not available	
5. Rajasthan				
Kotah T.P.S.	81.60	220	1982-83	8.00
6. Uttar Pradesh				
(i) Tehri Dam	305.00	710	Not available	10.00
(ii) Paricha	149.22	220		5.00
(iii) Koteswar Dam	43.00	180		
(iv) Palamaneri	71.50	80		
(v) Khara Tunnel	44.50	80		
(vi) Maneribhali Stage II	63.00	156		
Total Northern Region*				78.98
Western Region				
Gujarat				
1. Wanakbori Thermal (3×200MW)	192.00	200	March, 1980	44.44
		200	March, 1981	
		200	Sept., 1981	
2. Ukai (LB)) Canal Station (2×2.5/3MW)	2.50	5	1979	2.50
3. Other new schemes				4.00
Madhya Pradesh				
1. Korba (West) Thermal (2×200MW)	130.00	200	1980-81	87.00
2. Satpura Extn. Thermal (2×200MW)	139.70	200	NA	
3. Korba Extn. (1×120 MW)	34.2	120	1979-80	

—Contd.

Notes: *This excludes Dehar Extn. (2×165 MW) and Pong Dam Extn. Scheme (2×60 MW), estimated to cost Rs 52.00 crores and Rs 22.30 crores respectively, suggested by CEA, which will have to be financed, if taken up, by Punjab, Haryana and Rajasthan. Specific outlays for these two projects were not identified in States' discussions. Both the schemes are targeted for completion by 1981-82.

New Power Generation Schemes : 1977-79—Contd.

State/Scheme	Est. cost (Rs crores)	Benefits MW	Date of commissioning	Allocation suggested in final profile (Rs crores)	
Maharashtra					
Chandrapur (2×200 MW)	140.00	200	1980-81	75.00	
		200	1981-82		
Parli Extn. (1×200 MW)	72.00	210	1981-82		
Nasik Extn. (2×200 MW)	133.00	400	1982-83		
Gas Plant (6×35 MW)	54.29	N.A.	N.A.		
Trombay (2×250/300 MW)	152.00	500	1981		
Central					
Korba Super TPS				Lumpsum provided under central sector	
Total Western Region				212.94	
Southern Region					
Andhra Pradesh					
1. Balimela Dam (2×30 MW)	18.32	60	1981-82	10.00	
2. Donkarayi (1×25 MW)	7.08	25	1982-83		
3. Nagarjunasagar Rt. Canal P. H. (2×30 MW)	17.84	60	1981-82		
4. Nagarjunasagar Pumped Storage (4×100 MW)	113.00	400	1981-82		
5. Pochamped	N.A.	N.A.	N.A.		
Karnataka					
1. Varahi (2×115 MW)	86.16	230	1983-84	18.00	
2. Bedthi (2×105 MW)	91.64	210			
Kerala					
1. Ponnar Punnappuzha (2×35 MW)	19.15	70	1983-84	2.75	
2. Kakkad (2×25 MW)	18.60	50	1983-84		
3. Prinjakutty (4×60 MW)	77.00	240	N.A.		
4. Lower Periyar (4×60 MW)	57.00	240	N.A.		
Tamil Nadu					
1. Kadampurai (2×100 MW)	65.00	200	1982-83	20.00	
2. Nellithorai (1×50 MW)	10.04	50	1981		
3. Tuticorin Thermal Extn. III units (1×200 MW)	65.00	200	1982-83		
4. Akkamalai H.E.S.			Selective approach on choice of the schemes would be made.		
5. Cholathipuzha H.E.S.	2100.00	60			
6. Lower Mettur H.E.S.	3391.00	160			
7. Manimuthar H.E.S.	2405.00	65			
8. Paralayar H.E.S.	563.00	35			
9. Shanmuganadhi H.E.S.	1596.00	30			
10. Upper Amaravathi	852.00	20			
11. Upper Tharbaraparani	4955.00	165			
12. Mettur Thermal	6553.00	330			
Total Southern Region				50.75	

New Power Generation Schemes : 1977-79—Contd

State/Scheme	Est. cost (Rs Crores)	Benefits MW	Date of commission- ing	Allocation suggested in final profile (Rs crores)
Eastern Region				
Orissa			NIL	
Bihar				
1. Koel Karo (6×115+1×20)	167.00	710	}	25.00
2. Tenughat (2×200)	138.00	400		
3. Barauni VII Unit (1×110)	30.20	110		
West Bengal				
1. Kolaghat 2nd & 3rd Units (2×200)	N.A.	400		24.00
2. Rammam H.E. (4×12.5)	24.15	50		5.00
Total Eastern region				54.00
North-Eastern Region				
1. Tripura				1.04
2. Manipur				1.00
3. Nagaland				0.45
Total North-eastern region				2.49
Union Territories				
1. Arunachal Pradesh				0.60
2. Andaman & Nicobar Islands				0.82
Total Union territories				1.42
Central Sector				
1. Deptt. of Atomic Energy				1.00
2. D.V.C.			}	50.00
3. Super Thermal Station (Deptt. of Power)				
Total Central sector				51.00

Recommended Provision on New Schemes in Power Sector : 1977-79

				(Rs crores)
1. States				
Andhra Pradesh	10.00	Rajasthan		8.00
Assam	(to be reviewed)	Sikkim		Nil
Bihar	25.00	Tamil Nadu		20.00
Gujarat	50.94	Tripura		0.4
Haryana	14.50	Uttar Pradesh		15.00
Himachal Pradesh	4.00	West Bengal		29.00
Jammu & Kashmir	1.70	Total States		399.16
Karnataka	18.00	2. Union Territories		
Kerala	2.75	A & N Islands		0.82
Madhya Pradesh	87.00	Arunachal Pradesh		0.60
Maharashtra	75.00	Total U.Ts		1.42
Manipur	1.00	3. Central Plan		
Meghalaya	Nil	Deptt. of Power D.V.C.		50.00
Nagaland	0.45	Atomic Energy		1.00
Orissa	Nil	Total Centre		51.00
Punjab	35.78	Grand Total (1+2+3)		451.58
(Provisional)				



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ORIENTAL FOR SERVICE AND OVERALL PROTECTION

Steel industry : the tasks ahead

R. P. Billimoria

MUCH HAS been written about rapidly increasing production of iron and steel in our plants, escalating productivity of our operations, and an extremely harmonious state of industrial relations, which has been commended even by our Prime Minister as a model to be followed by other industries. Of course, these are all true. But this is not what I would like to emphasise at the moment. My main emphasis, in taking over as chairman, IIL, a few months back, has been not only to market larger quantities of finished steel at home and abroad, but also to improve profitability.

It is my endeavour to reduce production costs through meaningful cost exercises, and through better training of workers to managerial cadres. It is intended to lay more secure financial and technical foundations for the future growth of the Indian steel industry, through a regular rhythm, without unduly encumbering the national exchequer for investment funds.

challenging task

Effort is being made to secure a price level that, on the one hand, does not play an inflationary role in the national economy, and on the other, generate sufficient surplus resources — misallocated profits — which could be invested to make the attainment of a target of 75 million tonnes of steel ingots by 2000 AD a feasible proposition.

Mr R.P. Billimoria is chairman, Steel Authority of India Ltd.

tion. It is a challenging task. But we have accepted these challenges with fortitude.

multi-pronged approach

The dimensional strands of these challenges are located in the present, in the immediate future and also in the long-term prospects. This multi-dimensional challenge requires a multi-pronged and a multi-disciplinary approach with vision and design, with all the new scientific management aids, and obviously with more mature industrial relations and technical scrutiny of middle and top managements at regular intervals. I often ask myself: are we going to allow technological obsolescence also to creep in the steel industry? Was IISCO's failure in 1972 not also due to technological obsolescence in addition to poor management practices prevailing then? We are not going to allow technological obsolescence to creep in SAIL subsidiaries.

What is our immediate and most urgent task? Selling more finished steel at remunerative prices at home and abroad. We have more steel to sell because our production of finished steel increased in the first six months of 1976-77, over a similar period of 1975-76, by 25.5 per cent or nearly 820,000 tonnes. In the whole year, it would be roughly 1.65 million tonnes more than last year. This would be worth anywhere between Rs 180 crores and Rs 250 crores depending on the categories we produce. Naturally,

we are trying to export more iron and steel this year. Aggregate exports are likely to be 1.5 million tonnes of finished steel and 1.0 million tonnes of pig iron in 1976-77, roughly valued at Rs 300 crores, provided the international market does not dip or crash further. With hopes of receding stagflation in 1977, we are aggressively planning these exports. Even then, we hope to sell more steel at home this year as compared to the last year, and in 1977-78, the prospects of indigenous steel market look more promising because of larger fifth Plan outlays on developmental projects for 1977-79.

Indigenous market dynamics in steel have undergone vast changes during the last two years, more specifically in the last few months. Unfair trade

practices and flourishing black markets in steel have been put down with a heavy hand. Movement of steel and its distribution has been simplified reducing the time lag between indenting, production and delivery. The fabricator does not now carry large inventories, which is a great help to him in these days of high interest rates.

The recessionary phase of 1975 hit the steel producers the world over, an affliction which continues unabated. Many leading producers in Europe, America and Japan had to resort to cut back in production ranging from eight per cent to 28 per cent as can be seen from Table I. World steel production declined sharply from 710 million tonnes in 1974 to 651 million tonnes in 1975, a drop of 59 million

TABLE I
World Cut-back in Steel Production: 1975

Country	Crude steel output in MT		Cut-back in 1975 over 1974	
	1975	1974	MT	%
USA	106	132	(—) 26	(—) 19.8
Japan	102	117	(—) 15	(—) 12.6
Europe (9 countries)	125	156	(—) 31	(—) 19.5
Federal Republic of Germany	40	53	(—) 13	(—) 24.1
France	22	27	(—) 5	(—) 20.4
Belgium	12	16	(—) 4	(—) 28.4
UK	20	22	(—) 2	(—) 11.6
Italy	22	24	(—) 2	(—) 8.0
Total World	651	710	(—) 59	(—) 8.3

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Head Office Calcutta
Technical Development Division
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nes. In the EEC, there is a
to curtail steel production
further, but through car-
sation of the cuts. We in
ia are against cut-backs in
steel industry as basically
per capita consumption is
y low and we have put up
ese steel plants at great
ts and sacrifices.

India was among those few
untries which achieved
her production levels during
75 and still higher one in
6. The USSR occupied
first position in steel pro-
ction with a record of
1.16 million tonnes as seen
Table II.

Indigenous strategy

This should show that we
not going to follow the
el strategy of Europe, Ame-
a and Japan but devise
own particular strategy,
est suited to our peculiar
nomic conditions. Recent
althier home market trends
ve given further impetus to
s view. After all, if we
duce 6.8 million tonnes
finished steel in 1976-77,
l export 1.5 million tonnes,
n disposable magnitudes for
home market turn out to
only 5.3 million tonnes. In
first four months of
6-77, the domestic market's
take was on average
3,000 tonnes a month, which
August went up to 464,000
nes and in September to
0,000 tonnes. If this rising
nd continues — as is most
ely—then we should be able
market 5.42 million tonnes of
shed steel this year at home.
course, this will still leave
problem of carry over of
ne stocks. No doubt that
reased utilization of plant
capacities — 100 per cent at
ilai, 91.1 per cent at Rour-
a and 71.6 per cent at
rgapur together with 97

per cent at TISCO and 63.7 per
cent at IISCO — has created
cash flow problems for SAIL's
subsidiaries. But I am certain
that with time, and through
implementing certain measures
which are still under considera-
tion of the government, this
problem too will be solved.
Our successes on several fronts
have generated this optimism.

rapid pick-up

Let us view this problem
from another angle. The steel
industry has now attained a
fairly high rate of capacity
utilisation and till the time
the expanded units of Bokaro
and Bhilai go into production
in early 1980s, increase in fini-
shed steel output will not be
of the same magnitude as in
the past two years. There are
definite signs of a rapid pick
up in industrial activity and
the impact of the larger fifth
Plan allocations are bound to
be felt in the next few months.
The present stock of steel is
thus a good insurance against
possible shortages should the
pick up in construction and
fabrication activity be more
rapid than anticipated at the
moment. At the same time,
we are exploring all avenues
for stimulating steel consump-
tion.

One area where there is a
good scope of increased use of
steel is the rural sector. The
fact that our per capita con-
sumption of steel is as low as
14 kg shows that consumption
of steel has been mainly in
industry or urban construc-
tion. A task force has been
created in SAIL to study the
possibilities of increased uses
of steel in rural sector parti-
cularly for grain storage, agri-
cultural implements, rural
housing, irrigation and the
like. Replacement of wood by
steel would be of ecological

advantage also as it would
prevent indiscriminate felling
of trees and adverse changes
in climate and humidity.

While on one side efforts to
stimulate consumption of steel
would continue, full attention
has to be paid to the
growth factor also. As seen
from Table III, India has
registered a very low growth
rate in steel-making during the
last 25 years as compared to

other prominent steel produc-
ing nations.

If India has to advance in-
dustrially there is no other way
than to increase steel produc-
tion. We are aiming at a tar-
get of 75 million tonnes by the
turn of the century. If we
achieve this target, and we are
at the same time able to check
our population growth, in 2000
AD per capita consumption of
steel will go up to 94 kg and

TABLE II
Higher Production in Steel: 1975

Country	Crude steel output in MT		Increase in 1975 over 1974	
	1975	1974	MT	%
USSR	141.16	136.21	4.95	3.6
India	7.99	7.04	0.95	13.5
China	30.00	27.00	3.00	11.1
Brazil	8.39	7.52	0.87	11.6
South Africa	6.83	5.84	0.99	17.0
Total Eastern Europe	51.39	48.86	2.53	5.2

TABLE III
Growth of Steel Production

Country	Production in MT		Increase MT
	1950	1974	
India	1.6	7.9*	6.3
Japan	5.3	117.1	111.8
Italy	2.6	23.8	21.2
Poland	2.8	14.6	11.8
Australia	1.6	7.8	6.2
USSR	29.8	141.6*	111.8
West Germany	15.5	53	37.5
France	9.5	27.0	17.5
UK	18.2	22.4	4.2
USA	96.8	132.0	35.2
World Total	200.0	710.0	510.0

* 1975 being the year of cut-back comparison has been made
with 1974 figures except in case of India and the USSR
where there was no cutback.

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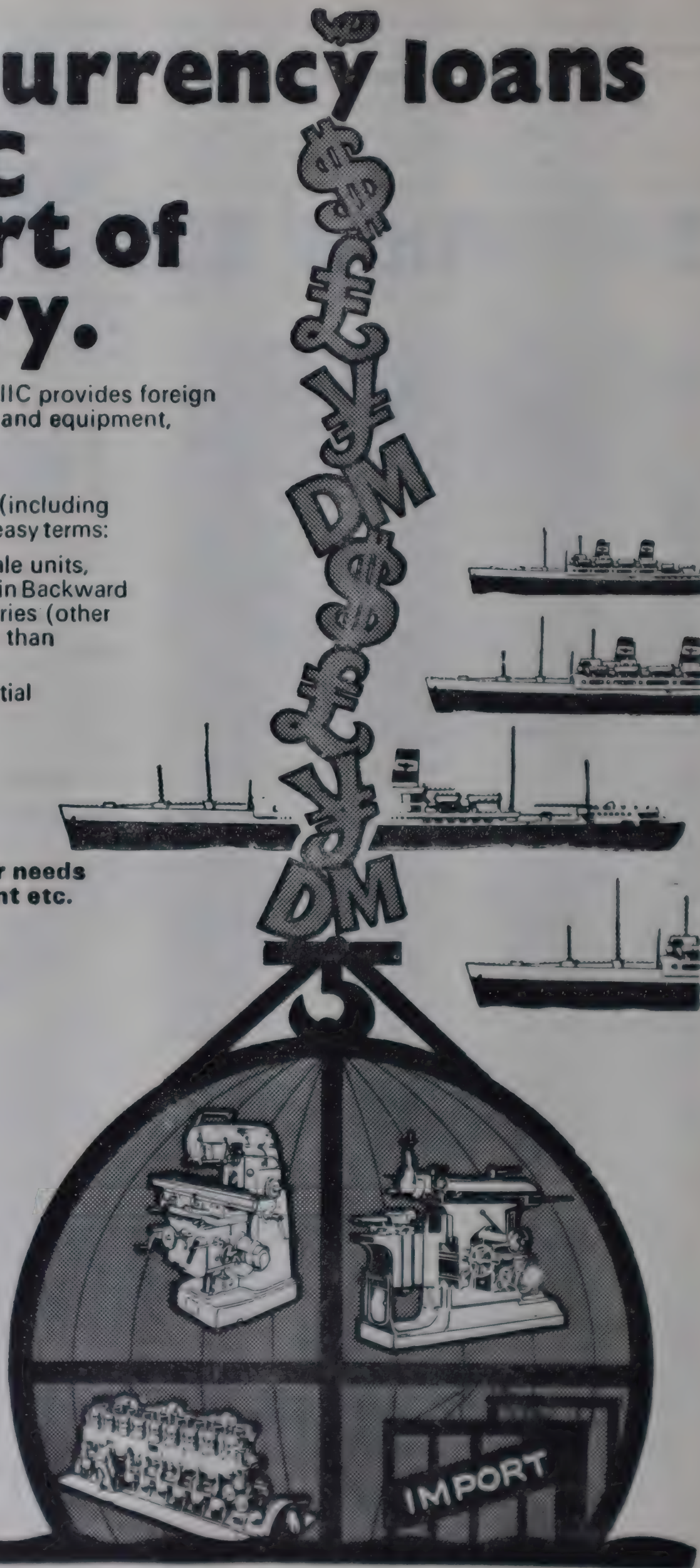


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we will still be very low among the world steel producers as most of them would have increased their production at an equally rapid pace if not more. UNIDO has also recommended increasing seven times the steel capacity in the less developed countries by 2000 AD. If we follow the UNIDO scale of development our target of 75 million tonnes would appear to be quite modest.

This brings us to the question of resource mobilisation for growth. An idea of a rapid increase in investment costs due to world-wide inflationary pressures at different points of time can be had from Table IV, although these figures cannot be very accurate indicators, because of a wide variation in facilities and rolling equipments in different plants.

Even so, they are indicative of the trends.

The investment costs have gone up substantially, which are estimated at Rs 5000 per tonne at present. To this Rs 2000 per tonne has to be added for infrastructure facilities like mining and raw materials, electric power, water, transport and township, which puts the investment cost at Rs 7000 per tonne for a green field site. It would, thus, be seen that during the last 20 years there has been an increase of over 536 per cent. Besides the direct investment in steel, there will have to be a sizeable investment in creating matching facilities for inputs, transport and equipment manufacture. A study is being made by SAIL to examine realistically all these imperatives in detail.

TABLE IV

Investment Trends in Steel Industry

Plant		Gross block (Rs in crores)	Block per tonne ingot capacity in rupees.
Bhilai			
1 million tonnes	1958-59	201.1	2011
4 million tonnes	1975-76	1450.0	3625
Rourkela			
1 million tonnes	1958-59	235.0	2350
1.8 million tonnes	1965-66	410.0	2278
Durgapur			
1 million tonnes	1959-60	195.0	1950
1.6 million tonnes	1965-66	265.0	1656
Bokaro			
1.7 million tonnes	(estimated)	941.0	5535
4 million tonnes	1975-77	1889.0	4722
TISCO			
1 million tonnes	1930-31	94.0	940
2 million tonnes	1958-59	200.0	1000
IISCO			
1 million tonnes	1958-59	106.5	1065

Steel will play a major role in India's development plans in the years ahead. Our country is endowed with abundant reserves of practically all the raw materials required for steel-making. The steel industry has now created a good reservoir of human talent to shoulder any responsibility in the development of industry. Our prime minister's leadership has made us all determined to face all types of challenges that may face us in future. The steel industry on its part is fully geared to meet the new challenges. We are determined to further increase the operational efficiency and achieve yet fuller utilisation of available capacity as also to provide liquid resources from within.

In sum, as I stressed in the beginning, new types of challenges have emerged on the steel scene. We have licked the older problems of low

capacity utilisation, low productivity, poor industrial relations, poorer maintenance practices, uncertain management action and so on. We are now on to new jobs of selling more steel, creating more capacity, improving profitability, achieving total self-reliance in all dimensions of steel-making, and providing the wherewithal to the national economy to reach the take-off stage, if not during the sixth Plan period, then certainly during the seventh Plan period. This is our guiding star. This is our strategic goal. This is our motivational force. We are not resting on our laurels. In SAIL, where we work in a team, we are conscious of new challenges and also of our collective capacity to meet them. For me, this is the unfolding perspective of the Indian steel industry.

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Aluminium : symbol of prosperity

S.S. Kothari

IN THE world today every country irrespective of its location has to struggle hard to provide basic amenities of life to its nationals. The prosperity of the country would depend on the employment potential created for increased population. A country lagging behind in this respect is bound to lament in years to come to the misfortune of its countrymen.

India has a large population of more than 600 million at present which is likely to grow to 900 million by the turn of this century. This will positively be a big swarm of people and unless the people of this great country realise the shadows of the coming events, the future generation will be doomed. Everyone therefore has to struggle hard to save the future generation from the tragedy of starvation.

the challenge

Can we take the challenge? Are we capable of taking correct measures courageously to ensure better life for the coming generation? I think we can. We have all basic requirements for launching such schemes which would in time to come help to decipher and unravel the knotty and complex problems for easy solutions. The architects of freedom including our beloved leader the late Jawaharlal Nehru remarked from time to time that for independence to have any meaning for the people of

India, all national efforts must be directed to seek their economic emancipation from generations of abject poverty and misery. This task can only be achieved by taking recourse to modern scientific attitude for the growth of both industrial and agricultural economy.

basic requirements

Among many, metal and electricity are the basic requirements for industrial development which in turn provides the base for agricultural development and these together provide better living conditions to the people of the nation. In short, it can be said that metal production and electricity generation in a nation are in a true sense the index of its prosperity.

No doubt steel had the monopoly to be called as metal of the industry but today it is facing a growing challenge from versatile aluminium having impressive combination of properties such as lightness, high strength/weight ratio, toughness, good corrosion resistance, non-toxic characteristic combined with high thermal and electrical conductivity etc. Aluminium is not only becoming a vital industrial metal, it is becoming a metal of electrical energy also as it is the basic workhouse for the generation and administration of electrical energy—be it thermal, hydroelectric, nuclear, tidal, solar, etc.

Aluminium being the industrial and electrical energy metal occupies a unique place today

in the list of basic materials required for the progress and prosperity of a nation. It is a matter of great satisfaction and pride that India is having vast resources of bauxite which is the basic raw material for the production of aluminium. As in January 1973, the estimated bauxite deposits were 356 million tonnes but the recent investigations have revealed an enormous deposit of high grade bauxite in the eastern coast encompassing the states of Orissa and Andhra Pradesh. The extent of this new bauxite deposit itself is estimated to be about one billion tonnes, which will produce about 200 million tonnes of aluminium.

vast possibilities

In comparison to its resources, India's present installed capacity for the production of aluminium is only 0.25 million tonnes per annum and its capacity will increase to 0.47 million tonnes only by the year 1985 as per the licences already issued by the government. The government is already looking into the vast possibility of the expansion of aluminium industry which is going to be pace setter for the economic development of this country. The other important raw material for the production of aluminium is power. With Himalayas as the crown of the country and it being the biggest source of water supply through rivers, big hydel power generation projects can be expected in future. The harnessing of river water for the cause of electri-

city generation will save the sands of lives and loss of crores of rupees in terms of crop destruction every year caused due to violent floods.

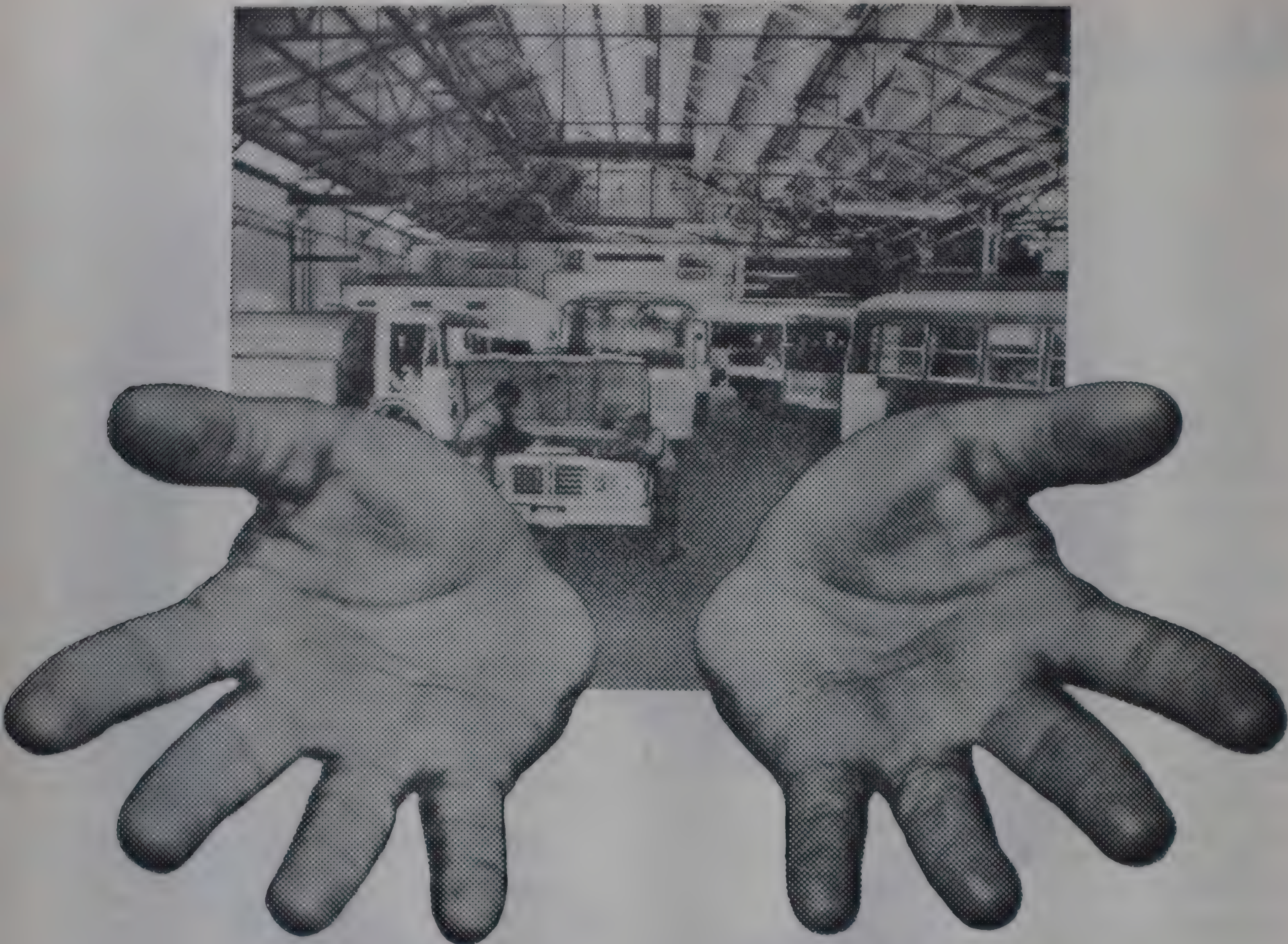
thermal power

Apart from river resources India is having vast deposits of coal estimated to be 83,700 million tonnes which can be utilised partly for the generation of thermal power. The hydel power may be reserved and utilised for the production of aluminium which in turn will lead to the industrial and agricultural development and enable the country to realise its future economic goals. The cost of power for the production of aluminium being very significant, it is only the cheap hydroelectric power which can serve the cause of the aluminium industry in the best possible manner and enable aluminium to reach the common man at the anticipated growth rate.

Every day brings the development of new products made of aluminium or the adoption of aluminium to those uses for which other ferrous or non-ferrous metals were being used. Aluminium, being the lightest of the common non-ferrous metals with the highest strength to weight ratio in the form of alloys, is indispensable and non-replaceable by any other metal for many applications. The infinitely diverse application of aluminium will act as a stimulant in various fields such as electrical communication, building and

Mr. S. S. Kothari is president of Hindustan Aluminium Corporation Ltd, Renukoot, Mirzapur (UP).

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struction, architecture, can- and packaging, agriculture, nsportation, aviation, nu- ur and space research etc.

Pure aluminium has an elec- al conductivity of 62 per at IACS on equal volume sis and over 200 per cent on al weight basis when com- red with copper. As a rule thumb, for equal capacity electrical energy transmis- n, an aluminium conductor required to have 1.6 times lme but only half the weight copper. With the useful mbination of high electrical nductivity and high strength/ ight ratio, aluminium has bstituted copper to a very rge extent in all types of bles and conductors. This cludes high and low tension overhead lines, underground bles PVC/VIR and other type insulated cables. Aluminium s also replaced copper in e rotors of electric motors, sbars and electrical windings d motors and transformers.

big help

This substitution has helped dia in a big way in saving e scarce foreign exchange d will continue to help in a ill bigger way as the substi- tion will be effected in newer d specialised areas of elect- cal applications in future ars. India has very limited eposit of copper ore, estimat- d at about 332 million tonnes ly and thus capacity of pro- ducing about five to seven illion tonnes of copper only. uch a low indigenous availa- bility of copper in the country turally puts a heavy burden a our economy if copper in e required quantity is to be rported for meeting require- ent of the electrical industry. e designers of electrical uipment and machinery have redesign their equipments

using aluminium which will meet the challenge posed by the shortage of copper.

use in architecture

Aluminium has also got great potentiality in the field of building and architecture. The building industry takes an important share in the devel- opment expenditure of a country. It is estimated that about one-third of the total outlay of development expen- diture in industry, health and education goes into building. Aluminium having a unique combination of properties such as higher strength/weight ratio, high corrosion resistance to stand varied weathering con- ditions, having high thermal conductivity and ease of fabri- cation at low cost will replace many well-known materials. It is not only used for making different types of hardwares which were previously made of copper or brass but it is now finding extensive usage in structural members of a build- ing.

It is admitted that the modulus of elasticity of alumi- nium is one-third that of steel but looking to its very favour- able strength/weight ratio one finds that it supports the same load. With the same deflection, an aluminium structure will rarely be having more than half the weight of steel. However, for popularising aluminium in the building construction industry, a lot of research, design and development work needs to be conducted by the designers and the architects to give concrete shape to their ideas. India having a vast population is faced with the problem of speedy construc- tion of houses for the millions and aluminium can provide real solution to this problem. Aluminium can be used advan-

tageously for the construction of rail and road bridges with almost no maintenance cost. Indian Railways and Defence departments are working on these lines and during coming few years substitution in this area will be effected in several states of the country.

The cost of fuel oil and petroleum is increasing day by day causing a heavy burden on our economy in terms of for- eign exchange. The use of aluminium in automobile bo- dies and engines will help con- siderably in reducing the dead weight of vehicle to the extent of about 50 per cent. This will increase the pay load and reduce the fuel consumption. It has been estimated that autos in the USA will consume 200 lbs of aluminium per unit by the year 1980. This change-

over from steel to aluminium has been necessitated by the rising cost of gasoline and and superior long-term perfor- mance of elegant aluminium bodies. Aluminium is finding more and more use in railway coaches and in advanced western countries and Japan all-aluminium coaches are in popular use which enables very fast movement of the railway traffic. The Research, Design and Standards Organisation of Indian Railways has already decided to work on this pro- ject and develop some all-alu- minium coach bodies indige- nously. With the development of some special alloys required for this enduse, construction of all-aluminium coaches will become a reality in this coun- try also.

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aluminium constituted 75 per cent of the total of Apollo—11 space-which took man to the for the first time. In rocketary is in an infant and the consumption of mium in this field is to increase. Indian rays are engaged in elect- railway tracks so that movement of men and may be fast and the en exchange burden due nport of diesel oil being for railway traction may reduced. Traditionally, ic traction has utilised er conductors since its tion and these conductors ight have given excellent ce. Due to scarce availa- of copper, designers have started looking toward ble aluminium alloys as a titute of cadmium-copper nary and grooved contact

wires used in overhead electric traction. The trials so far conducted with aluminium alloys have been very encouraging and thus a new area of usage of aluminium in substantial quantities is being opened. There is tremendous scope for using more and more aluminium in canning and packaging industries in the form of collapsible tubes, packing boxes, packing foils, medicine cans, container, etc.

Aluminium has provided the common man his kitchen and cooking utensils at very low cost. Aluminium utensils are not only cheap, they are also very hygienic. The other conventional utensil materials such as copper or brass used to impart a different taste to the food products but aluminium does not impart any taste due to its reaction or discolour the food products.

India being an agricultural country, a large proportion of our countrymen live in villages and earn their livelihood from agriculture. Rural development needs availability of modern methods of farming, better living conditions and development of employment potential. Application of imported methods of farming needs electrification of villages so that pumping sets/tubewells required for watering the fields could be energised. The vast net-work of transmission lines made of aluminium conductors has helped the country immensely in its electrification programme of rural areas. In the coming years, aluminium will be extensively used for transmission towers and accessories and will thus help in reducing the cost as the span can then be increased substantially.

Aluminium is already being

used in appreciable quantity for irrigation tubing and sprinkler systems. Aluminium silos and sheds will be a common sight in the countryside in the near future.

Aluminium having properties of high reflectivity, attractive appearance, high corrosion resistance, good characteristics of fabrication, surface finishing and casting, provides a vast potential for a mushroom growth of cottage industries. Indian artisans can create fascinating wares not only to satisfy the local tastes but also to build up a prosperous export market to earn valuable foreign exchange. To name a few, articles like inexpensive costume jewellery, decoratives for various purposes like cast pieces in the form of animals, victory tower and table lamps, domestic gadgets and toys, and alumi-

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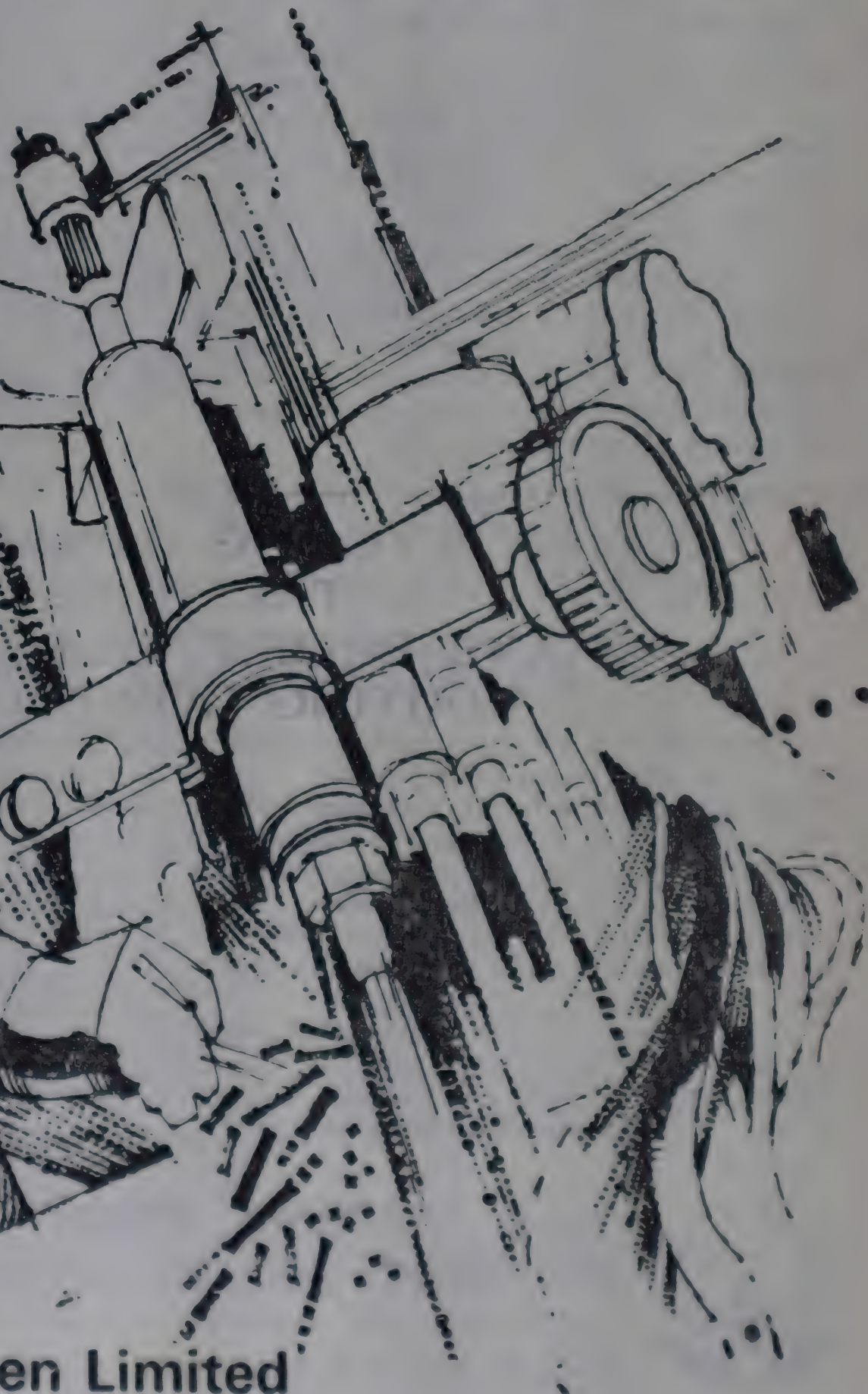
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um shots and notch bars
ed in steel industry can be
duced by these cottage
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export possibilities

In India aluminium is not only an industrial metal, common-man metal and electrical energy metal but it is something more than that. It can earn a lot of valuable foreign exchange. In the international market, the price of aluminium escalated from 32 cents per pound or Rs 6.62 per kg in January 1976 to 48 cents per pound or Rs 9.50 per kg in August 1976. It is expected that the international price will rise still higher in the near future as there is going to be shortage of aluminium in such countries as the USA and Japan. The present selling price of aluminium in India is Rs 7800 per ton and allowing 15 per cent for freight and CIF, the total price would be Rs 8970 per ton or 44.8 cents per pound which is quite below the current international price of 48 cents per pound. The vast resources of bauxite in the country and the competitive price of aluminium in international market, provides unlimited scope for India to produce more and more aluminium and earn valuable foreign exchange by export. The foreign exchange so earned will help the country in importing certain other materials necessary for technical and industrial development, rural development and ultimate progress of millions of our countrymen.

After having reviewed the potentiality of aluminium for its application in various fields it will be worthwhile to look at the growth of the aluminium industry in the world as well as in India. The total world

production of aluminium in the year 1886 when the revolutionary Hall-Hercult process of electrolytic production of aluminium was invented was only 17 tonnes. This industry has shown a phenomenal growth rate since the beginning of the 20th century, specially during and after World War II. The total world production of aluminium in 1940 was 0.72 million tonnes and it rose to 12.81 million tonnes in 1975. By the turn of the present century the total world production of aluminium is expected to rise to 17 million tonnes. The Indian aluminium industry, although only 33-year old, has made tremendous strides with production rising from a meagre 1292 tonnes in 1943 to about 215,000 tonnes in the year 1976. Table I shows the steep rise in the production of aluminium in the country since 1955.

index of production

The decline in production in the years 1973 to 1975 after touching the figure of 179,103 tonnes in 1972 was on account of major power cuts to the various smelters in the country. The output, however, has again increased with effect from July 1975 with the improved power supply position to the smelters. Table II shows the index of production of aluminium, taking the base year as 1960 equal to 100.

From Table II it is evident that the index of production of aluminium in our country touched the fantastic figure of 965 in 1972 which was higher than that of even the most advanced countries of the world such as the USA and Japan.

The index of production of aluminium in India will cross 1150 in the current year as

total production is expected to be 215,000 tonnes as compared to the output of 179,103 tonnes in 1972 when the index was 965. From the above one can easily visualise the speedy

growth rate of aluminium production in India during the last 16 years.

The present per capita consumption of aluminium in India is only 0.38 kg as com-

TABLE I
Production of Primary Aluminium in India: 1955 to 1976
(tonnes)

Year	Production	Year	Production
1955	7,107	1966	63,627
1956	6,604	1967	96,352
1957	7,909	1968	1,20,100
1958	8,312	1969	1,32,508
1959	17,372	1970	1,61,171
1960	18,245	1971	1,78,256
1961	18,381	1972	1,79,103
1962	35,208	1973	1,54,266
1963	55,222	1974	1,29,131
1964	56,158	1975	1,67,062
1965	68,677	1976	2,15,000*

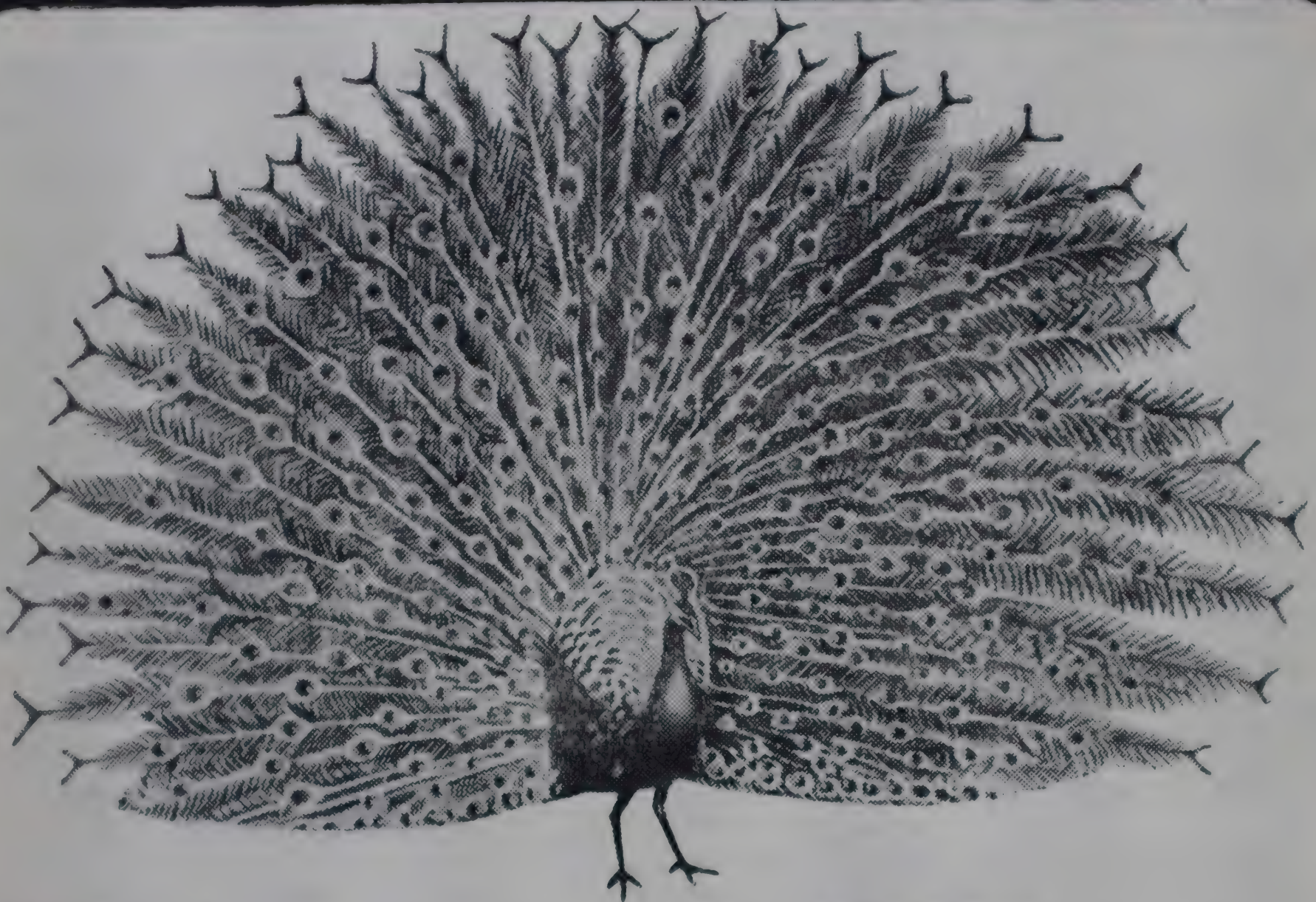
*Estimated

TABLE II
Index of Production of Aluminium Ingots
(base year : 1960=100)

Year	India	Japan	USA	World
1960	100	100	100	100
1961	101	116	94	101
1962	193	129	105	109
1963	303	169	115	119
1964	313	201	127	134
1965	381	223	137	145
1966	462	255	147	159
1967	533	289	162	175
1968	663	364	162	188
1969	732	431	188	209
1970	889	556	197	227
1971	964	680	197	242
1972	965	768	207	257
1973	846	834	227	281
1974	708	851	246	307
1975	916	771	195	283

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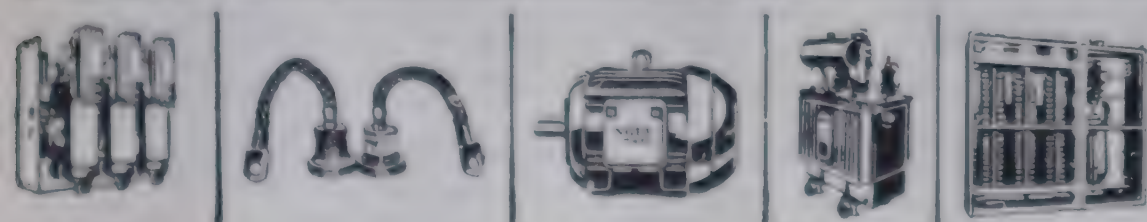
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pared to the figure of 22 kg of other advanced countries like the USA, Norway etc. The consumption of aluminium in India will increase with the economic development as per capita consumption of primary aluminium is related to gross national product per capita of the population. For comparison per capita consumption of aluminium of the countries in the western hemisphere for 1974 is given in Table III.

the perspective

Even if we presume the present pattern of consumption of aluminium in India it is estimated that the indigenous requirement of aluminium will be of the order of 450,000 tonnes in the year 1978-79 against the production of about 390,000 tonnes. There is likely to be a shortfall in indigenous production to the extent of about 50,000 tonnes per year. The estimated requirement of aluminium in various sectors

TABLE III

Per Capita Consumption: 1974

Country	Consumption (Kg)
Norway	23.4
Sweden	19.1
West Germany	16.4
Switzerland	15.6
UK	12.3
France	11.3
Netherlands	11.0
Italy	10.5
Austria	9.3
Spain	7.2
USA	22.0
India	0.38

for the year 1978-79 is given below in (000 tonnes):

Electrical industry	249
Utensils and consumable durables	68
Transport	54
Building and construction	27
Defence	18
Canning and packaging	11
Miscellaneous	18
Total	446

As new developments are taking place every day, the demand is expected to be more than the figures estimated as above. To avoid shortfall, substantial expansion in the production of aluminium capacity is needed.

The government has set the target of aluminium production at 1.2 million tonnes by the turn of the century. This has been estimated on an average growth rate of six per cent per annum. It would be worthwhile to look into some of the aspects that can sustain the growth of the industry at the anticipated rate:

1. Stable price of aluminium for reasonably long period coupled with stable incidence of indirect taxes.

2. Availability of all the inputs, including power, to the aluminium industry at reasonable prices.

3. Increase in the fabrication capacity and specially of high strength alloys for sophisticated uses.

4. Development of surface finishing technology of aluminium which will help this metal to penetrate in the field of building, architecture and transportation.

5. Larger outlay in the five year Plans for ship building, aircraft and rail coach construction.

6. Replacement of rigid flexible containers made out of tin plate by aluminium.

7. Penetration of aluminium in the storage and preservation of foodgrains.

8. Increase in outlay for rural electrification.

9. Aluminising in place of galvanising.

10. Replacement of steel core wires for ACSR conductors by strands of suitable high strength aluminium alloys.

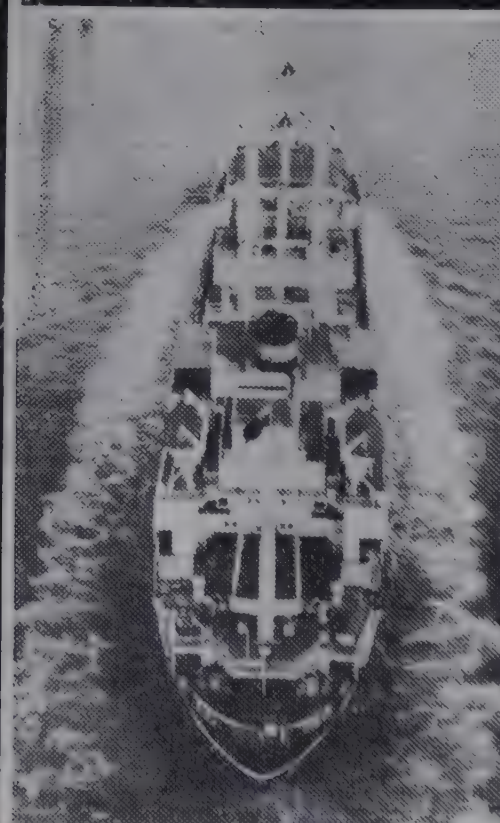
Aluminium is not in any way behind any other metal so far as employment potential is concerned. It provides direct employment as well as indirect employment. Indirect employment is provided by setting up small-scale and middle-scale industries based on alu-

minium which can be enormous. The aluminium industry also creates huge potential for self-employment through contractors, agents, transporters, suppliers etc. It is estimated that an aluminium plant producing 100,000 tonnes of aluminium has employment potential for 100,000 persons directly and/or indirectly.

The growth of aluminium industry provides the resourceful tool for the present generation to discharge its responsibility. With the available internal resources, the technical expertise and the availability of manpower, aluminium industry will help in the transformation of the socio-economic structure of the country in a big way.

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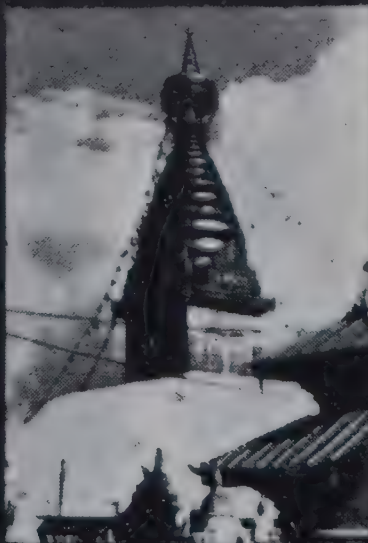
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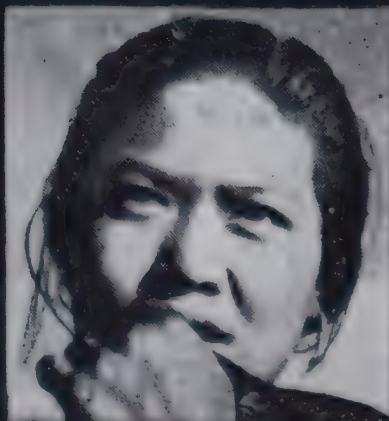
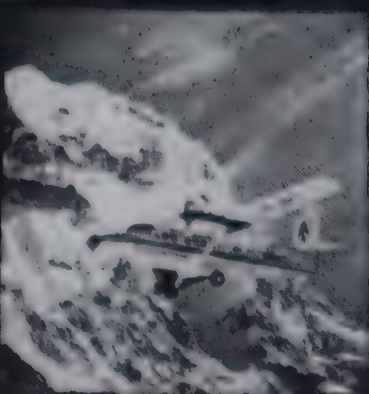
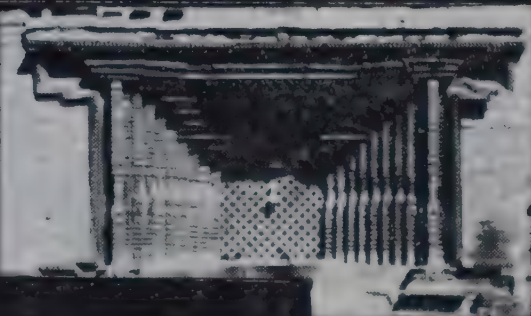
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King coal to the fore

R. C. Ummat

THE SCALING down of the production target for the coal industry not only for the terminal year of the current Plan period, i.e. 1978-79, to 124 million tonnes from 135 million tonnes recommended in the draft fifth Plan—not to peak of 145 million tonnes which was the original target contemplated for this year when fifth Plan exercises were undertaken—but also for the current financial year from the level of about 108 million tonnes envisaged in the beginning of the year to 103.5 million tonnes is suggestive enough of the most important problem facing this premier industry.

Not that the coal output targets were not revised downwards earlier during the era of planned development. This exercise has been indulged in by the Planning Commission and the department of Coal quite frequently, starting from the second Plan, the most significant slashing down being done in the third Plan target from 97 million tonnes to 80 million tonnes.

vital difference

But there is a vital difference between the earlier exercises and the one done now. Earlier, invariably the targets had to be brought down because in view of the limited resources available and the then competence of the industry, they appeared to be unattainable. Simultaneously efforts had to be made to contain the demand for coal for low-priority consumers such as the brick-burning industry. The current exercise, however, has been necessitated by supply exceeding demand, notwithstanding

the fact that concerted efforts have been made in the last about 12 months or so to remove many of the causes which hampered consumption. Some efforts have been made even to increase the use of coal through switch-over from oil since 1973 when the price hike effected by the oil exporting countries called for measures to curb the demand for petroleum products so that the import bill on this account could be contained.

restriction removed

While the policy of substituting the consumption of oil by several industrial units is stated to have resulted in a saving of over two million tonnes of crude oil by the end of last year, the easier availability of railway wagons, especially since the latter half of the last year, coupled with the steady uptrend in the output of coal, has led the government to do away with almost all the restrictions on the supply of coal practically throughout the country. Simultaneously, the domestic distribution system has been rationalised as well as streamlined a great deal through dividing the country into four zones. A fifth zone has been created comprising the integrated steel plants.

The various constituents of Coal India Limited (CIL), which came into being last year through the reorganisation of the coal industry, after nationalisation a few years earlier have been individually entrusted with the specific responsibilities of catering for the requirements of the five zones. The Western Coalfields Ltd., Nagpur, deals with the require-

ments of Madhya Pradesh, Rajasthan, Gujarat, Maharashtra Andhra Pradesh, Karnataka, Tamilnadu and Kerala. The needs of the states of Orissa, Bihar and Uttar Pradesh, along with exports to Nepal, are being looked after by the Central India Coalfields Ltd, Ranchi. The Eastern India Coalfields Ltd, Sanctoria, has been entrusted with the charge of meeting the requirements of West Bengal, Assam, Arunachal Pradesh, Tripura, Sikkim and Bhutan as well as export commitments to Bangladesh, Burma and Sri Lanka. The requirements of Jammu and Kashmir, Himachal Pradesh, Punjab, Haryana and Delhi are being catered for by Bharat Coking Coal Ltd., Dhanbad. This organisation also looks after the needs of the steel plants.

The above-mentioned delegation of responsibility has expedited a great deal the processing of indents of consumers. The coordination between consumers and suppliers too has been improved very significantly. The result has been that hoardings about coal being available in plentiful supplies can be witnessed in various parts of the country.

Vigorous steps have also been taken by CIL to not only

meet fully the requirements of the bulk consumers of coal such as the thermal power stations, steel plants and cement factories but also to build up, for the first time since Independence, more than adequate stocks at the premises of these consumers. The steel plants, thus, have currently 21 days' consumption stocks, while the stocks with the thermal power stations and cement factories are stated to be of the order of 35/36 days' and 21 days' requirements, respectively. These consumers never experienced such a comfortable coal supply position during the past 25 years. In fact, for nearly a decade and a half they were invariably obliged to carry on with stocks of less than ten days. In December 1974, the steel plants, for instance, had to face even such a critical situation that the coal stocks at their end were sufficient for barely three days' requirements.

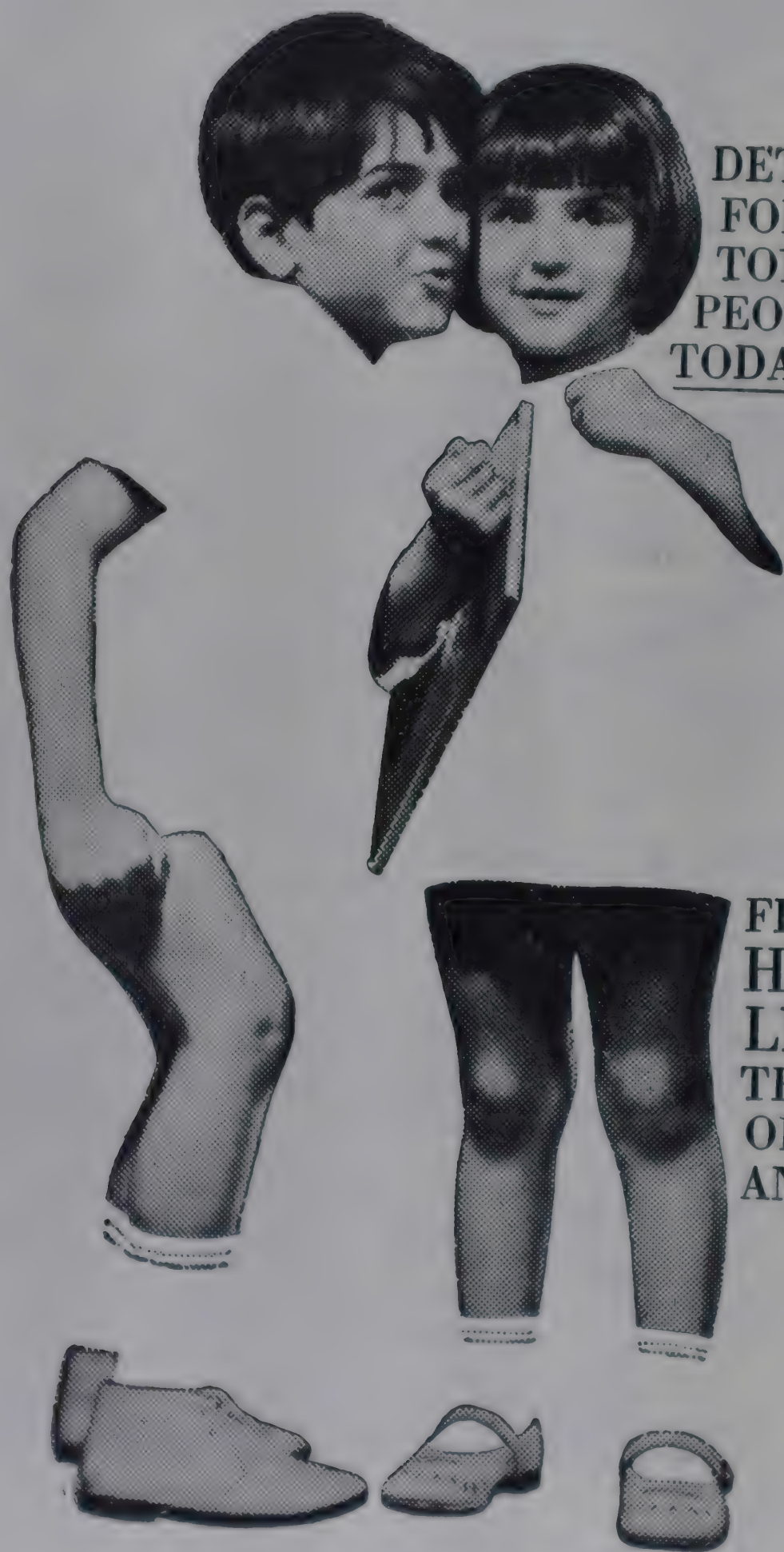
The impressive coal inventory at the bulk consumers' end undoubtedly has created a good deal of confidence among them; they have been able to plan their production programmes without inhibitions about supplies of this fuel.

The CIL has also embarked upon an ambitious programme

TABLE I
Coal Exports from India

(100,000 tonnes)

Country	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76
Bangladesh	—	—	2.47	3.04	3.92	3.50
Burma	2.84	1.84	1.50	0.78	0.86	0.80
Sri Lanka	0.05	0.09	0.04	0.05	—	—
Nepal	0.09	0.14	0.23	0.25	0.86	0.03
Bhutan/Sikkim	—	—	—	—	0.01	—
Total	2.98	2.07	4.24	4.12	5.65	4.33



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exploring foreign markets for our coal, particularly non-coking coal. As Table I (1310) shows, exports of coal last year were just around 33,000 tonnes to the neighbouring countries of Bangladesh, Nepal, Burma and Sri Lanka.

Concerted efforts are currently being made to interest west European nations and also Japan, Hong Kong, Taiwan and Singapore in our non-coking coal which, due to its very low sulphur content is considered to be suitable for these countries facing the pollution problem. Trial shipments have already been made to some of the west European countries. They are stated to have been received well. Negotiations are also being conducted with Egypt for a long-term coal supply contract to that country. It is hoped that coal exports this year may go up to as much as 1.5 million tonnes—700,000 tonnes to the traditional markets of Nepal, Bangladesh, Sri Lanka and Burma and 800,000 tonnes to the non-traditional markets being explored this year.

Rising stocks

Despite the above endeavours, stocks of coal at the pitheads, however, have gone up substantially during the last 12 months. At one time towards the end of last year, they approximated 12 million tonnes. Currently they are around 10 million tonnes. The genesis of the decision to scale down this year's output target apparently lies in this, as the comfortable supply position has resulted, along with the building up of stocks at the bulk consumers' end, from a step-up of just 11.38 million tonnes in output last year

from the previous year's level of 88.42 million tonnes and that too when under the emergency the economy showed an all-round progress. The 1974-75 output of 88.42 million tonnes compared with a production of 78.17 million tonnes in 1973-74 (Table II).

Contributing factors

A few words here may not be out of place in respect of the factors contributing to the increase in the output of coal during the last two years. It must be conceded that the rate of growth in production during these years has surpassed all previous records. Whereas the declaration of emergency in June 1975, helped in inculcating greater discipline among workers, the much improved power supply as well as railway movement enabled higher production as the planning of output could be done in a more effective way than had been the case earlier, and seven-day four-shift a working week could be undertaken.

On current indications, no shortage of coal can be expected to occur in the next couple of years, notwithstanding the fact that a spurt in demand is envisaged soon because of the commissioning of the Talcher and Ramagundam coal-based giant fertilizer projects and the proposed development of the steel and power sectors. As Table III shows, these three consuming sectors are going to account for the major portion of the increase expected in the use of coal by 1978-79.

The increase in the requirements of the power sector is anticipated to be as much as 12.46 million tonnes over the 1975-76 level and that in the requirements of the steel plants as much as 7.74 million

tonnes. The fertilizer sector in 1978-79 is expected to consume 3.10 million tonnes of coal, as against just 0.93 million tonnes in 1975-76. The increase in the consumption in other sectors is anticipated to be of a much lower order. The overall demand for coal, excluding the requirements of exports, in 1978-79 is now ex-

pected to be around 121.40 million tonnes, as against 92.32 million tonnes in 1975-76. Exports are envisaged to be pushed up to 2.50 million tonnes, taking the aggregate requirements to 123.90 million tonnes. Hence, the target of production has been set at 124 million tonnes.

As the production develop-

TABLE II
Production and Consumption of Coal
(million tonnes)

Year	Production	Domestic consumption
1972-73	77.22	70.04
1973-74	78.17	77.03
1974-75	88.42	86.94
1975-76	99.80	91.11
1976-77 (Target)	103.50	101.10 (Estimated)

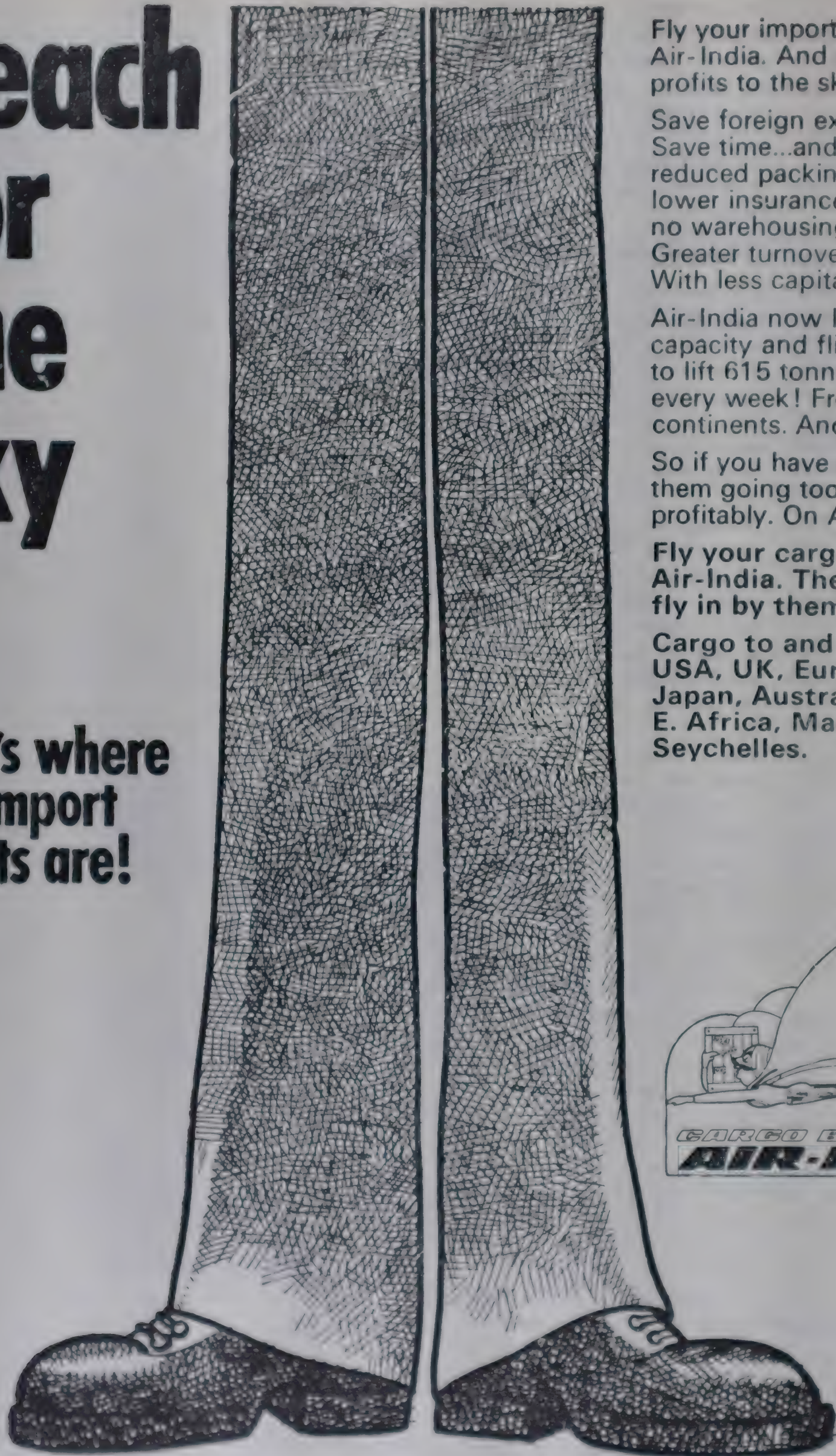
TABLE III
Sector-wise Coal Consumption and Demand
1975-76/1978-79

	Consumption		Demand	
	1975-76 (Million tonnes)	% of Total	1978-79 (Million tonnes)	% of total
1. Coking coal including blendable coal for metallurgical industry, steel washery and coke oven)	20.96	22.60	28.70	23.16
2. Power	23.04 (1.42)	24.84	35.50 (3.10)	28.65
3. Railways	14.30	15.42	13.50	10.90
4. Cement	4.44	4.78	5.10	4.11
5. Brick kilns	3.34 (0.44)	3.60	4.50 (1.00)	3.64
6. Fertilizer	0.93	1.00	3.10	2.50
7. Soft coke	3.64	3.92	5.00 (0.60)	4.04
8. Export	0.44	0.47	2.50	2.02
9. Other industries	18.77 (0.82)	20.14	23.00 (0.80)	18.56
10. Colliery consumption	3.0	3.23	3.00	2.42
	92.72 (2.68)	100.00	123.90 (5.50)	100.00

(Figures in brackets are middlings)

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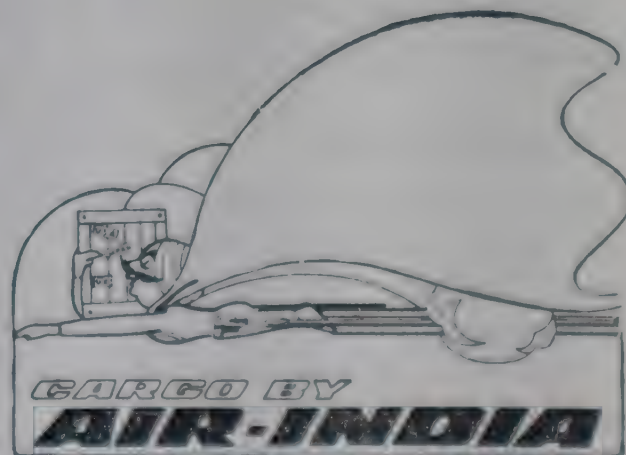
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nt programmes are increas-
ly being tailored to the
uirements of the specific
consumers and the various
nes to cater for the demands
the fertilizer and steel plants
thermal power stations are
ng developed accordingly,
pull of this demand on the
plies to the other sectors is
t likely to be any significant.
his is the reason why short-
es of coal are not anticipated
occur during the terminal
years of the current Plan.

The raising of production
om 99.8 million tonnes last
ear to 124 million tonnes in
78-79 too is not expected to
ose any problem as the deve-
pment efforts hitherto have
een going on on quite an ambi-
ous scale in terms of the draft
an target of raising the out-
ut to 135 million tonnes by
78-79. In fact, the scaling
own of the current year's pro-

duction target has only resulted
in cutting back on the output
in some mines without affecting
the development programmes.
If the observation of the chair-
man of Coal India, Lt-Gen
K.S. Garewal, in an interview
with *Capital* recently is any
indication, the development
programmes of CIL appear to
be being implemented to cater
for a demand of a much higher
order than what the above
table suggests. The figure men-
tioned by him is the original
145 million tonnes estimate of
fifth Plan end demand, though
he hastened to add that the
1978-79 requirements were cur-
rently being reassessed by the
ministry of Energy.

It is encouraging to note
that notwithstanding the fact
that CIL, as the apex body of
the nationalised coal industry,
is currently faced with the
problem of stimulating offtake,

it is not losing sight of the
long-term perspective for the
industry in terms of the revised
fuel policy of the government.
This policy aims at the utilisa-
tion of coal as the primary
source of energy to the maxi-
mum extent so that not only
the as yet limited domestic
resources of oil can be utilised
most profitably by obviating,
to the extent possible—of
course, in a judicious manner
—the use of oil as fuel and the
oil import bill can be contained
but also the indiscriminate use
of firewood and cowdung can
be curtailed in the interest of
conserving the forest wealth
for climatic reasons and releas-
ing of valuable organic manur-
es for agricultural purposes.

It is estimated that nearly
233 million cubic metres of
wood equivalent to 160 million
tonnes is burnt as fuel every
year. The amount of cowdung

burnt every year for the same
purpose is said to be equal to
eight times the production of
the Sindri fertilizer plant.
Since an overwhelming propor-
tion of the economically wastef-
ul use of these materials
occurs in the countryside, the
problem can be solved only
through a massive effort at
making available coal there.

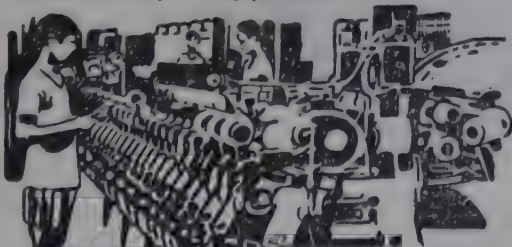
Some beginnings have been
made in this direction, but
they as yet amount to just
touching the fringe of the
problem. It can only be hop-
ed that the efforts initiated by
CIL will gather momentum
in the years to come.

It, of course, has to be ap-
preciated that what can be
aimed at in regard to displac-
ing the use of firewood for
burning purposes by coal in
the first instance is such dis-
placement in cases in which
firewood is bought. Where

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collected free, it may not be possible to encourage switch-over to coal which has to be paid for.

So far as cowdung is concerned, the task can be handled more easily through encouraging the farming community of the value of cowdung for manurial purposes and encouraging them to sell it to the needy which would provide funds for the purchase of coal for burning purposes.

Replacement programme

The CIL, of course, is undertaking a much more vigorous programme to replace the use of kerosene for cooking purposes. The main thrust of this programme is the production of smokeless coal pellets and smokeless soft coke and domestic gas. The Bharat Coking Coal Ltd will be producing at one of its collieries 3,000 tonnes of smokeless coal pellets from low-grade coal for marketing in the Delhi-Chandigarh region by October next. Another colliery of this constituent of CIL is undertaking the production of 6,000 tonnes of smokeless pellets next year. A low-temperature carbonisation plant is proposed to be set up at Dankuni, near Calcutta, for producing smokeless soft coke and domestic gas for that area. Plans are also said to have been drawn up for putting up low temperature carbonisation plants to cater for the requirements of Kanpur and Hyderabad regions.

Another important decision taken recently by the union government, which has a vital bearing on the use of coal in the country in terms of the revised fuel policy, is to set up a giant (2,000 MW capacity) thermal power stations near the coalfields which, besides facilitating a rapid expansion of

the electricity generation capacity, will obviate haulage of coal over long distances and also enable greater utilisation of the inferior types of coal having high ash content upto 40/50 per cent. The establishment of one such super thermal power station near the Singreni Coalfields has already been sanctioned. At present four such stations are envisaged to be put up in the eighties. By the early eighties, it is felt that the country will master the technology of manufacturing 500 MW generation units which will facilitate establishment of super thermal stations near the coal pitheads on an ambitious scale.

Still another crucial development on the coal front recently, again as a sequel to the revision in the fuel policy, has been the proposal of CIL to the ministry of Energy for inclusion in its corporate perspective plan for the 10 years to 1985-86 production of oil from coal. An investment of Rs 400 crores has been suggested for this purpose. The CIL desires this plan as a modular type to be fitted with the national plan.

attaining self-sufficiency

The manufacture of coal-based liquid synthetic fuel is assuming importance in the interest of making the country self-sufficient in oil as expeditiously as possible. Notwithstanding the promising results from the Bombay High and Bassein exploration efforts and indications of some more sizeable discoveries likely in the near future, self-reliance in petroleum may not be possible till the middle of the eighties as demand in future can be expected to grow at a rate faster than has been the case in the last three or four years.

During these years the demand has been contained through a sharp increase in the excise levies on petroleum products. As the consumers have already got accustomed to high prices, they cannot be expected to continue to exert the same pressure on the growth in demand in the future. The strides that the economy has to take in the coming years is another factor to be taken into consideration in this regard.

Experts opine that as long as the prices of natural crude oil exceed \$10 a barrel, the manufacture of liquid fuel from coal is a feasible proposition. Any sharp drop in the prices of crude oil from the present level of about \$12 a barrel obviously can be ruled out in the foreseeable future unless there are vast new discoveries of oil, particularly on-

shore. Off-shore production obviously is an expensive proposition.

The perspective plan of CIL envisages that the overall requirements of coal by 1985-86 would go up to 183.34 million tonnes. This estimate is stated to have been arrived at after long deliberations and extensive exercises, taking into consideration the likely changes in the utilisation of coal in the country as well as the likely pace of development of the economy during the next 10 years. The likely impact of the efforts at increasing the off-take of coal by the domestic sector, the brick-burning industry, small industries and increasing of exports to five million tonnes too is stated to have been taken into account while drawing up the Plan.

The requirements of the



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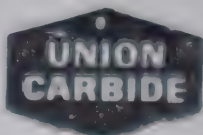
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ver sector by 1985-86, it has n estimated, would go up 39 million tonnes and those the steel sector by 16 million nes. The other sectors will count for an increased and of about 35 million nes. The growth in the and in the domestic sector expected to be from 3.8 million tonnes in 1975-76 to 5 million tonnes and the ck kiln industry from 3.7 million tonnes to seven million nes.

The plan is estimated to cost 3,355 crores, including the 400 crores expenditure proposed to be incurred on the production of oil from coal. A m of Rs 2,092 crores is envisaged to be spent on the development of mines alone. The plan envisages progressive indigenisation of all plant and equipment in the coal industry by the end of 1985-86 so that there would not be any need for importing any equipment thereafter.

The exploration efforts are proposed to be mounted on an ambitious scale, covering 479,000 metres of drilling, so that adequate, proved reserves are established. The aim will be to build up a shelf of six years' production equivalent after catering for all the new projects to be planned during the 10 years to 1985-86.

a highlight

Another highlight of the plan is progressive mechanisation of coal mining for increasing production from open-cast mines. Long-wall mining is to be adopted on an increasing scale so that by 1985-86, 30 per cent of mining is done through this method. At present this percentage is negligible. Open cast mining is envisaged to account for 38 per cent of the total coal output at the end of the perspective

plan period, as against 26 per cent at present.

Coking coal washing capacity under the plan is proposed to be raised to 42 million tonnes from the present about 22.5 million tonnes. Beneficiation of non-coking coal would be attempted on a selective basis for an input of 16.72 million tonnes in the steel industry. These two programmes are estimated to cost Rs 200 crores.

The policy of encouraging the use of washed coking coal as well as the beneficiated non-coking coal in the steel industry obviously has to be not only continued but more vigorously followed. Our known reserves of coking coal, as shown in Table IV, are none-too-abundant. At the likely consumption level of 1988-89, they are not estimated to last for more than 44 years. On the other hand, the non-coking coal reserves are much more abundant.

judicious use

In fact, the policy of judiciously using the minerals the known reserves of which are non-too-abundant, has already been decided upon in the case of some other materials also. These include chromite, kynite, barytes and high-grade manganese ore.

Exports under the plan are proposed to be raised to five million tonnes per annum from about 1.5 million tonnes expected this year. The foreign exchange earnings from these should stand in good stead to CIL in the execution of its programmes of large gasification plants and the production of oil from coal, which will be having quite a sizeable foreign exchange component.

In view of the massive investment required in the development of the coal sector

during the next 10 years, the recent plea of the minister for Energy, Mr K.C. Pant, that the bulk consumers of coal in future should attempt to indicate more precisely their requirement estimates is not misplaced. With coal-mining to be undertaken in the coming years on deeper horizons, the investment requirements undoubtedly will be much higher. If the demand estimates can be drawn up more precisely, undue locking up of money in coal-mining can be obviated. It, of course, is heartening to note that planning in the coal sector now is being attempted to err in favour of marginal surpluses rather than marginal deficits.

important issue

Along with the programmes to expand coal production well in time to meet the future requirements, an important issue on which concerted thought has to be bestowed is the rationalisation of the prices of the various types of coal.

An experts committee of the ministry of Energy has recently reported on the matter and has suggested that coal products for the domestic sector should be priced according to the degree of sophistication of the end-product and the national necessity. They should take into account both the economic cost as well as the opportunity cost. This is necessary not only for the

rationalisation of demand for coal and encouraging fuel efficiency but also for the generation of funds required for future development.

But if the increases in the prices of various types of coal are to be contained within reasonable levels, efforts will have to be directed towards eliminating some levels of middlemen as well as to suitably revise the formulae governing consumer prices.

vested interests

Some steps have been initiated recently in regard to direct supplies by CIL of coal to dealers which have enabled them to reduce the prices of domestic fuel by five to six per cent. But the vested interests in some states are reported to have prevailed upon the authorities to issue instructions to dealers not to sell soft coke below the prices notified prior to the onset of direct supplies by CIL. Such situations need to be tackled effectively if the switch-over from firewood to coal is to be encouraged. It also affects small industrial consumers.

The need for the revision of the formulae governing the prices of hard as well as soft coke will be evident from the fact that by the time these materials reach such distant places as Bombay, their prices get escalated by anything from 125 per cent to over 250 per cent. The price to the consumer goes

TABLE IV
Balance Life of Known Reserves of Coal at 1988-89
Consumption Levels

Type of coal	Balance life
1. Coking coal	44 years
2. Non-coking coal	
(a) Indigenous requirements only	168 years
(b) Indigenous requirements plus exports	159 years

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an inverse proportion to quality of coal. One important point that needs attention in this connection is shortage allowed at the mining ends. Checking of quantity of coal consignments at CIL can also yield whole-sale results to bring down the incidence of the allowance for shortage of consignments at the consumer ends.

Two other steps that are under consideration in this regard are improvement of railway freight rates and high improving the quality of coal to the extent possible by better loading and use of higher capacity wagons for transport. This, of course, can be done only over a period of time as facilities will have to be created for handling larger quantities of coal both at the dispatch and unloading points. Along with the rationalisation of the prices of the various grades of coal in terms of the experts committee's report, the

lowering of the incidence of interest burden caused on CIL by the delayed payments by bulk consumers, particularly in the public sector, can help in improving at least to some extent its profitability. Towards the close of 1975-76, the arrears of payments to CIL, amounted to over Rs 90 crores. They are said to have come down now to about Rs 60 crores, half of which is said to be disputed amount. But even then they are significant.

The CIL has introduced recently the system of insisting on payment by bulk consumers of the bills for coal supplied to them. But this system needs refinement through a simultaneous improvement in the settlement of disputes about quality and weight of supplies. The bulk consumers feel that the new system will put them in the situation regarding these disputes in which CIL is at

present. Disputes currently linger on for months.

The gradual reduction in the incidence of surplus work-force on the cost of raising coal as a result of future development of the industry in which this work force can be judiciously absorbed should also go some way in improving the profitability of the industry. The latest estimate puts the surplus work-force at as high a figure as 30,000.

Modernisation of the existing mines is another way of improving the profitability of CIL. This will help in raising productivity per worker. This aspect of the issue, of course, is already being attended to by CIL. The increase in productivity in the last two years has been quite significant. The overall output per man-shift is said to have gone up during these two years from 0.58 tonnes to 0.63 tonnes. It is

envisaged to be raised to 1.04 tonnes by 1985-86 under the perspective plan of CIL.

Safety in the mines is another issue that has come to the fore recently. Some concerted steps have been taken following the recent tragedies in this regard too and an all-out effort is claimed to have been initiated to tone up administration at every level. Mining safety is of paramount importance not only from the human angle but also from the production viewpoint.

With CIL now going into its 25th year, it should be expected that the mining operations would be increasingly undertaken on a systematic basis and the necessary restructuring of the various mines which had been unscientifically worked by the unscrupulous among the erstwhile private owners would be completed expeditiously.

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Power availability and its cost

D. D. Puri

ENERGY is vital to the economic growth of a country. In fact power development along with smooth transportation constitutes the most important infrastructure and, though the contribution of energy to the economy of a country in monetary terms may be a small proportion of the GNP, the shortfall in power affects GNP several fold. The future development of the country, therefore, will depend upon the rate of growth of power generation capacity to meet the fast increasing power demand both for industry and agriculture; upon the efficient distribution of power generated to the consumers' premises and upon the excellence of consumer service. The power industry in the country had been facing serious problems due to shortfall in the achievement of generation targets, lack of proper maintenance of plants leading to low utilisation of installed capacity, organisational weaknesses, and scarcity of funds.

present capacity

Presently, we have an installed capacity of about 23 million KW and even on a very conservative estimate it must be raised to around 150 million KW by the end of the present century. Unless this target is realised, the country will suffer huge shortages in the fields of industrial development, agriculture and employment generation. This

is a challenging task indeed. It is in this context that the fifth Plan provision for power was raised upward to Rs 4,538 crores for generation schemes as against Rs 3,323 crores in the draft Plan, apart from listing various measures to rejuvenate the power management system. Let us, therefore, have a look at the power scene to examine how far such a target is capable of achievement.

the perspective

At present there are 77 undertakings in the public sector and 30 in the private sector operating in the country. The public electric supply industry generated around 70 billion KWh and sold 53 billion KWh to 21 million consumers in 3,120 towns and 17,269 villages. The installed capacity of around 23 million KW consists of 8.5 million KW from hydro, 13 million KW from thermal and 0.75 KW from nuclear sources. Though the country has taken vast strides since Independence — installed generating capacity has increased from 1.90 million KW to 23 million KW — our performance has not been extraordinary and in terms of per capita consumption (1973-74—103 KWh) we are still at the lower end of the spectrum, way behind the advanced countries. Even in terms of achievement of targets of additional generating capacity, whilst the shortfall was 15.4 per cent during the first Plan it was as high as 50 per cent in the fourth Plan. In

terms of actual expenditure, the cost has been going up having reached a startling figure of 150 per cent of the planned outlay in the fourth Plan.

In the wake of the substantial emphasis on development of power in the prime minister's 20-point economic programme, various steps have been taken recently to improve the performance of the electricity boards.

The target of increase in installed generating capacity over the fifth Plan period is of the order of over 90 per cent from about 18,456 MW at the end of 1973-74 to about 30,955 MW at the end of 1978-79. The region wise break-up of installed capacity at the end of fourth Plan and fifth Plan period (expected) is given in Table I.

regional distribution

As between the four regions the highest Plan increase in installed capacity is in the northern region. Since under the planned expansion programme a number of new units will be still under commissioning trials in the last quarter of the fifth Plan period and allowing for retirement of older and obsolete plants, in all likelihood increase in effective capacity between March 1974 to March 1979 would be of the order of 50 per cent. Keeping in view of the heavy programmes of industrial development and agricultural growth, this addition to the capacity even if achieved

seems to be insufficient and the spectre of shortages in the near future cannot be ruled out.

principal factors

The draft fifth Plan refers to four principal factors that will influence the growth of capacity, namely (a) delivery of plant and equipment, (b) availability of steel and cement, (c) availability of finance in accordance with the needs of each project, and (d) the implementation capabilities of the state electricity boards. It is a matter of some satisfaction that of late greater attention is being paid to the time targets and progress of projects is being appropriately monitored. Action has also been initiated to make available scarce raw materials and foreign exchange, where necessary, and additional funds have been allocated where bottlenecks had appeared.

Steps have been taken to have a more integrated operation through paralleling of UP system with Bhakra and integration of this system with Chambal and Satpura portion of Madhya Pradesh. The scope and functioning of the Central Electricity Authority (CEA) has also been considerably widened and CEA is expected to play a pivotal role in supervising the healthy growth of the power industry in the country. So far so good. Yet in my opinion much more attention needs to be paid for proper management of the power industry to avoid the

Mr D.D. Puri is the chairman of Punjab Haryana & Delhi Chamber of Commerce and Industry.

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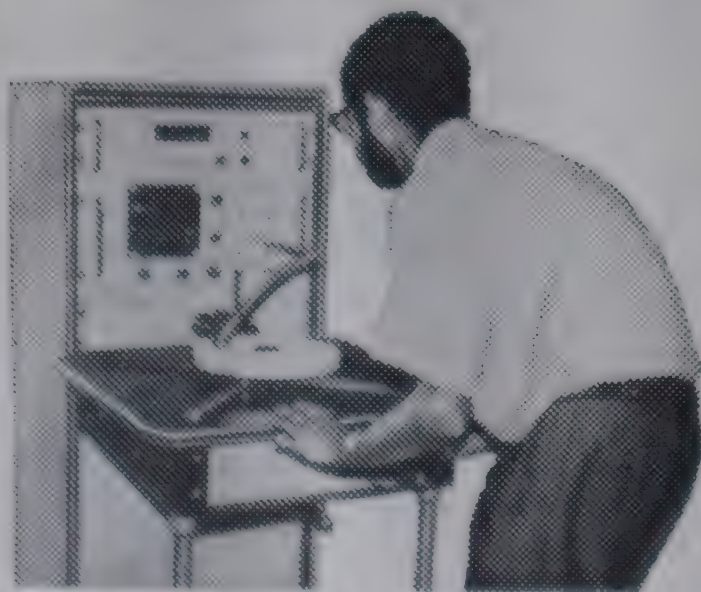
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serious and crippling shortages that industry and agriculture faces in the northern region till only last year and which such states as Tamil Nadu, Karnataka and Maharashtra are experiencing even now.

The planning for power has to be ahead of requirements and the constraints on the resources should not be allowed to come in the way of power development programme. To my mind there can never be a mistake on the surplus side as far as power development is concerned. In this connection, I could do no better than to quote from the recommendations made in the 39th report of the Estimates Committee—

“Since the cost of installing 1 KW of electric power is but a fraction of the capital investment required to utilise it, it is obvious that if in any eventuality power generating capacity was under-utilised, it would entail less overall loss to national economy than would be the case if productive machinery was to be rendered idle on account of power deficit. Past experience, in India and other countries, clearly shows that in a deve-

loping economy the demand for power nearly always out-runs the available supply. Planning for surplus power is, therefore, essential for achieving an optimum rate of growth in the country. The committee strongly recommend that power, being a primary source of energy, should be one step ahead of industrial and other requirements.”

It needs to be emphasised that power planning cannot be brought within the strict discipline of five-year spans. A hydro project takes anywhere between 10 and 15 years and a thermal plant 5 to 8 years before commissioning. There is thus an imperative need of perspective planning covering next 20 to 25 years span so that our targets are related to the global perspectives. This, to my mind, is a task which must receive prompt attention of Central Electricity Authority and the Planning Commission, if we are to avoid the recurrence of shortages in future.

Electricity industry is a highly capital intensive one. The functioning of the electricity boards has often been hamstrung on account of lack

of adequate funds. Various suggestions have been made from time to time to improve the poor financial performance of electricity boards and make them more viable. The Venketaraman committee which made a review of the working of the state electricity boards had suggested a phased programme for obtaining a minimum rate of return of 11 per cent i.e. on capital invested after meeting all working expenses and depreciation. The Chakravorty committee thought that the tariff introduced earlier needed correction on account of the fact that the demand for power in agricultural sector forms a substantial portion of the total demand and urged that the agricultural load should be charged with due regard to the cost of supplying power to the agricultural sector. The National Development Council in a resolution approved on September 25, 1976 suggested inter alia:

“In case of power systems, there is a scope to raise tariffs, the improvement in financial results should come largely from a higher level utilisation of the existing capacity, particularly thermal power plants, reduction

in transmission and distribution losses, better collection of dues, prevention of thefts and timely completion of projects. In addition, full advantage be taken of the opportunities for the exchange of surplus power between states and regions and for hydro and thermal plants so that capacities are optimally utilised”.

Power has all along been considered as an important infrastructural facility for encouraging and sustaining the industrial and agricultural growth. In the context of the current debate on the subject of improving the viability of state electricity boards and its likely impact on electricity tariff I would like to deal with this aspect somewhat in detail.

At the outset, it needs to be examined to what extent the criteria of ‘rate of return’ should be applied in the case of electricity boards. Apart from the fact that the boards are entrusted with the social obligation of creating and maintaining the broad infrastructure, it is well known that often the boards have been charged by the state governments of the responsibility to

TABLE I
Regionwise Break-up of the Installed Capacity as at the End of the Fourth Plan and Fifth Plan by Type of Plant
(capacity in MW)

Region	as on 31.3.1974				as on 31.3.1979			
	Hydro	Thermal	Nuclear	Total	Hydro	Thermal	Nuclear	Total
Northern	2200	1759	220	4179	4005	4379	440	8824
Western	1037	2612	420	4069	1760	5042	420	7222
Southern	3080	1437	—	4517	4738	2387	235	7360
Eastern	580	3102	—	3682	977	4462	—	5439
North-eastern	67	147	—	214	138	177	—	315
Other union territories	—	3	—	3	—	3	—	3
Utilities total	6964	9060	640	16664	11618	16450	1095	29163
Non-utilities total				1792				1792
Grand total				18456				30955

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N.M.D.C. AND INDIA'S MINERAL WEALTH

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Projects under progress : Deposit No 5 at Bailadila—the most massive single deposit in the whole range containing 206 million tonnes of iron ore reserves is under construction, and should be ready for exporting ore by the end of 1976-77. A mine at Meghahatuburu is being designed to produce 1.20 million tonnes of lump ore and 2.6 million tonnes of fines to meet the requirements of the second stage of the Bokaro Steel Plant. This project is scheduled for completion by 1978-79.

Another mine at Donimalai, expected to yield 1.44 million tonnes of sized ore and 1.8 million tonnes of fines will go into production by October 1977.

NMDC did the entire prospecting and proving of the magnetite quartzite iron ore deposit in the Kudremukh area near Mangalore, pilot testing work and techno-economic feasibility study of the deposit, preparation of the detailed project report and its revision and updating for purposes of developing it for supply to Iran.

NMDC is also conducting feasibility studies for iron ore projects at :

- i. Deposits No 4, 11-C and 13 in the Bailadila range of Madhya Pradesh.
- ii. Ramandurg, Kumaraswamy and Bababudan in Karnataka.
- iii. Malangtoli Deposit in Orissa.

In tune with the Prime Minister's 20-Point Programme NMDC is involved in sustaining small industries, as well as developing backward areas-by providing housing, medical aid, education and other amenities to the economically weaker sections in undeveloped areas.

During its 18 years NMDC has come a long way on the road to self-reliance. And has set its aim at trebling the production of iron ore in the near future thereby ushering in a new era of prosperity for the entire nation through hard work, iron will and discipline.

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supply electricity for rural electrification and agricultural pumping sets at rates appreciably below cost. As has been pointed out by the Chakravorty Committee, the demand for power from agricultural sector has become quite a substantial portion of the total demand, and therefore the boards are losing quite heavily on account of this concession. Similarly, certain state governments are committed to offer electricity at concessional rate to the industries which, in turn, again impinges on the finances of electricity boards.

In all fairness, electricity boards should be allowed to operate on commercial principles and the cost of meeting socio-economic obligations should be subvented by the state governments. This would considerably improve the finances of the electricity boards and would avoid repeated exercises at revision of electricity tariffs.

importance of costs

In ensuring the viability of electricity boards the importance of keeping down the cost of transmission cannot be too strongly emphasised. At present, the transmission and distribution losses in the country are quite significant and there is much scope in this area to reduce these losses. Here, I would like to quote Prof Siddheshwar Prasad, who rightly emphasised that energy worth Rs 40 crores could be saved only if all the 28 million irrigation pumping sets be provided with LT capacitors. There is a wide disparity between the power losses of various states electricity boards. In some boards, the losses are only 10 per cent while in others, these are of the order of 30 per cent. The all-India average for these losses is 18

per cent as compared to eight to 10 per cent in Europe. Ten per cent reduction in losses could bring an additional revenue of Rs 140 crores approximately and reduction in one per cent loss would be equivalent to 200 MW capacity operating at 60 per cent load factor. The implication of saving on this account could not become more obvious.

Pilferage and theft constitute a major part of leakage and results in substantial loss to the state electricity boards. By fixing norms for standard losses, accountability could be fixed on the staff of electricity boards and the loopholes plugged.

stabilising equipment

Power losses can be checked up by installation of stabilising equipment and in this direction various state electricity boards are already taking suitable steps. It has now been very well recognised that a considerable part of power losses are on account of thefts, which can be controlled effectively by the state electricity boards.

For detecting the theft, it is necessary that some studies should be made in this direction in order to lay down the norms for power losses in the system. The following four case studies are recommended based on the principle: "Total losses = system losses + losses on account of thefts".

(a) A study of power losses on one complete feeder having more than 100 connections in a rural pocket, supply of which is controlled from one point.

(b) A study of power losses on an industrial feeder having 10 to 15 industries located on it besides a few small scale industries.

(c) A study of complete in-

dustrial estate with regard to power losses.

(d) A study of power losses in commercial and domestic areas by taking up the study of a complete town of medium size.

In all the above cases, measured supply may be fed into the system for one week continuously and the readings of the consumption by the consumers would be taken daily with the help of suitable staff. Thus the total metered supply fed into the system should be equal to the sum total of units consumed by the consumers plus the losses in the system. During this week, the investigators should ensure that no thefts take place and the system is closely guarded. This study would give a fairly reliable picture of the theft part when compared with the average losses in the state i.e. in closely guarded system there would be

no element of theft. After ascertaining the normal system losses in all the four cases, the losses on account of theft could be identified and for thefts the consumers and employees of the board would be asked to account for.

At this stage, we have to think as to how these boards could be economically viable and as emphasised in the resolution of the National Development Council improvement in financial results should come largely from :

- (a) higher level of utilisation of existing capacity particularly thermal plants;
- (b) reduction in over-head and operational expenses;
- (c) reduction in transmission and distribution losses;
- (d) better collection of dues;
- (e) prevention of theft and timely completion of projects;
- (f) efficient exchange of

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surplus power between state and regions;

(g) integrated operation of hydro and thermal power to utilise the capacities to the optimum.

The first guideline, which the National Development Council has suggested in this regard is better capacity utilisation. Based on the figures of 1973-74 the various plants in India had the capacity utilisation as follows:

Hydro: 4159 per KW of installed capacity i.e. 48 per cent.

Thermal : 4028 units per KW of installed capacity i.e. 46 per cent.

Gas stations : 2073 units per KW of installed capacity i.e. 24 per cent.

Diesel : 517 units per KW of installed capacity i.e. 6 per cent.

Nuclear : 3744 units per KW of installed capacity i.e. 43 per cent.

capacity utilisation

This gives a fair idea that the utilisation of the existing installed capacity is very low. It should not be difficult to step up this figure in coming two to three years at least to 65 per cent which has been attained in many countries of the world. It has been given to understand that the thermal directorate of Central Electricity Authority is already seized of the problem. Following suggestions could help in improvement of the position:

(a) proper placement of managerial, operational and maintenance personnel;

(b) proper control in regulation of fuel supply;

(c) making the spare parts available in time;

(d) to improve upon the design, and technical deficiencies

including proper maintenance and repair.

A recent survey conducted by BHEL on "Improving availability and utilisation of existing installed generating capacity" brought out 11 major factors in thermal power stations which have been graded in Table II.

The study has recommended that an improvement of 25 per cent can be achieved in plant availability and utilisation by implementing modern techniques in these areas.

availability factor

In the recent power ministers' conference it was felt that availability factor of power stations can go up to 85 per cent. At present there are only six power stations in the country which had achieved more than 75 per cent utilisation. These six stations could be considered the best one in the industry but they form only 4.5 per cent in the total industry in terms of the installed capacity. Another six stations are operating in the range of 65-75 per cent. These latter six stations account for 9.4 per cent of the total aggregate of all-India installed capacity.

At present 58 per cent of all-India total capacity is found to be operating at less than 55 per cent of rate of utilisation and another 28 per cent of the installed capacity in the range of 55-56 per cent. Thus 86 per cent of total all-India installed capacity is found to be operative at less than 65 per cent utilisation. There is thus a lot of scope for improving the rate of utilisation in thermal plants. This can bring additional revenue of Rs 280 crores approximately.

The next aspect which has

been suggested by the National Development Council is revision in over-head and operational expenses. In this connection, I would only suggest that the inter-firm comparison is the first thing which should be made. The expenditure incurred by the various state electricity boards on this account should be compared and there should be a free and fair discussion amongst those who run this industry so that they could improve upon their performances. After achieving the targets, based on the efficient board in the country, the comparison should be made with other developed countries of the world and these costs should be minimised. Laying down norms for these costs would also help to a great extent.

Often opinions are expressed that as the cost of power is insignificant in the cost of industrial end-products, industrial tariff could be increased without adding to the inflationary spiral. This is a fallacious argument. Power is one of the many components for manufacture of finished products such as raw materials,

labour, interest rates, taxes and so on. It is very relevant to examine the impact of increase in power rates on the overall profitability of the industry.

In many of the industries such as caustic soda, mini steel, aluminium, fertilizers etc power is used as a raw material where the higher costs of power is immediately reflected in the increased cost of production. Apart from this, in case of mother industries whose products form industrial raw materials for small and medium scale units, the higher cost of power gets reflected all through the chain and erodes the competitive capacity of the small and medium business to survive in a competitive market.

Suffice it to say that the power industry though in a happy position to pass on the burden of its increased costs to the consumers on account of its monopoly position has an important socio-economic obligation to make available adequate power at reasonable rates. It is, therefore, imperative that the electricity boards should strive to operate maximum efficiency and economy and higher tariff should not be

TABLE II
Gradation of Major Factors

Factor	Average Marks
1. Availability of spares in stock	24
2. Quality of the coal	14.06
3. Inadequacy of the maintenance	11.23
4. Availability of coal	11; 16.5*
5. Training of staff	9.12
6. Paper drawings, sketches, manufacturer's institutions	8.89
7. Modern gadgets, tools and handling facilities	8.4
8. Defective supply of the equipment	7.93**
9. Poor design/metallurgy of the equipment	6.81
10. Use of modern techniques	6.45
11. Scientific operations	4.81

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...the state governments also
...a direct responsibility for
...uring that the electricity
...ards operate as service-cum-
...mmercial organisations which
...encourage the process of
...nomic development and that
...y are not considered as milch
...ws for raising revenues in the
...m of electricity duties nor
...ded with expenditures incur-
...in furtherance of socio-
...nomic policies. The earlier
...s important premise is ac-
...ted the better it will be for
...future growth of industry.

...Having said this, I would like
...prefer to what industry could
...in this sphere. The steps
...at the industry could take
...:

(i) energy conservation
...asures including avoiding of
...aste, minimising non-essential
...es and improving efficiency;

(ii) energy economy measures,
...cluding captive generation
...ere necessary;

(iii) influencing government
...olicy, plans and legislation in
...e field of energy.

important role

...Industrial organisations have
...an important role to play in this
...half. The industry could
...romote maintenance consul-
...ncy in order to ensure opti-
...um efficiency. For example,
...uring the period of shortages,
...e Punjab Haryana and Delhi
...chamber of Commerce and
...dustry disseminated informa-
...on to its members regarding
...evices which could be used for
...ducing power losses. Simi-
...rly, the chamber issued guide-
...nes for operating diesel gene-
...rating sets. Another important
...ea where industry could asso-
...ate itself more effectively is
...the process of planning and

...development of power
...resources. It is no use trying
...to ration power when shortage
...has already developed. It is
...always more prudent to think
...and plan ahead.

...The Punjab Haryana and
...Delhi Chamber of Commerce
...and Industry has been paying
...a good deal of attention to this
...effect. It was as far back as in
...1965 that our chamber organis-
...ed the first conference on
...power to focus attention on
...power planning. In 1971, the
...second conference was organis-
...ed on Future Outlook for
...Power which was attended by
...eminent engineers all over the
...region, including Dr K.L. Rao,
...the then union minister for
...Irrigation and Power.

"Power for Growth"

...The third conference on
...‘Power for Growth’ was orga-
...nised in 1975 which was
...addressed amongst others by
...Mr K.C. Pant, Mr P.N. Haksar
...and Dr Y.S. Parmar and the
...participants included chairmen
...and senior officials from the
...states of Punjab, Haryana,
...Delhi, Rajasthan, etc. The
...conference focussed attention
...of the authorities on the need
...of restructuring of power
...organisation, inter-state coope-
...ration, speedy clearance of
...projects and improvement in
...distribution system. The con-
...ference felt that there should
...not be any financial constraints
...on maintenance of power gene-
...ration capability and further
...development of power poten-
...tial and urged on the Planning
...Commission and the govern-
...ment to give highest priority to
...power generation not only
...second to defence but on equal
...footing. The conference
...further recommended that the
...highest priority should be given
...for development of immense
...hydel power potential at

...present lying untapped and
...neglected in Himachal Pradesh
...and Jammu and Kashmir.

...Separate sessions were held
...for rural sector and self-gene-
...ration of power and appro-
...priate recommendations were
...made for better management of
...demand of the available energy
...for the rural sector. The con-
...ference was also of the view that
...to promote coordination bet-
...ween the boards and the con-
...suming interests, the consulta-
...tive councils set up under the
...Indian Electricity Act required
...to be made more effective by
...enjoining the boards to give
...due weight to these councils in
...matters such as planning, co-
...ordination, distribution of
...power as also in reviews of the
...power tariff as and when these
...are undertaken.

...I have mentioned all these

...recommendations in somewhat
...detail with a view to impressing
...that consuming interests have
...an obligation in their own
...interest to have a closer parti-
...cipation not only in formula-
...tion of plans for power but
...also in closely liaising with the
...state electricity boards and
...other agencies.

...In view of the key role of the
...power system in economic
...growth both in agriculture and
...industry, I would suggest that
...consumers generally and indus-
...trial consumers in particular
...should organise this for deve-
...loping suitable public opinion
...in the field, both at the
...national and regional levels
...with a view to ensuring pro-
...gressive improvement in the
...working and expansion of the
...national power system in the
...country.

With best wishes

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TURNING DREAMS INTO REALITY THROUGH COOPERATIVES

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	1962-63	1974-75
Cooperatives sold agricultural produce worth	Rs 160 crores	Rs 1,434 crores
Cooperatives marketed fertilisers and the agricultural inputs worth	Rs 54 „	Rs 715 „
Cooperatives sold consumer articles worth	Rs 28 „	Rs 750 „
Milk and milk products sold by dairy cooperatives	—	Rs 88 „
No. of cooperative processing units promoted	639	2,109
Short term & medium term loans issued by Primary Agricultural Cooperative Societies	Rs 203 crores	Rs 854 crores
Sugar produced by cooperatives	4.7 lakh tonnes (21.3% of country's production)	20.92 lakh tonnes (43.60% of national output)
Storage capacity with	11 lakh tonnes	45 lakh tonnes

NCDC has already invested more than Rs 170 crores for the development of Agricultural Cooperatives. More than 60 % of total fertiliser consumption in the country is being handled by the cooperatives through 51,000 cooperative retail depots.

NCDC is proud of its association with the cooperatives and shall strive to achieve still higher targets in its allotted roles in the Prime Minister's Economic Programme.

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Unremunerative cement price is a damper

Hardev Singh

DURING THE year 1976 the cement industry had a metamorphosis in the sense that it entered the buyers' market after enjoying a long spell of secure sale in a sellers' market. The scramble for cement quotas was over and the consumer could buy his requirement at will. This improvement in the industry has been brought about by a nearly 15 per cent rise in production during 1976 over the previous year. As against an output of 14.3 million tonnes in 1974 and 16.3 million tonnes in 1975, the output in 1976 was nearly 18.5 million tonnes (Tables I and II).

expansion plans

Increased production during 1976 partly became possible following the completion of the expansion plan of Shupendra unit of ACC by 100,000 tonnes and raising the production of Nimbehera cement plant from 252,000 tonnes to 300,000 tonnes. While the installed capacity during the year has been added by 150,000 tonnes, production has gone up by 2.3 million tonnes showing improved utilisation of capacity in most of the units. The capacity utilisation of the entire industry improved from 77 per cent during 1975 to 87 per cent during 1976. In fact the industry hoped to achieve a level of 92 per cent utilisation during 1977, thereby revealing the impact of improved labour relations and better supply of power and raw materials.

The location of limestone, by and large, determines the location of cement plants. Consequently Andhra Pradesh, Rajasthan, Madhya Pradesh, Tamil Nadu, Karnataka and Gujarat have a major share of the country's cement production. Northern India has an annual deficit of nearly two million tonnes (Table III). In 1975 output in the northern states of Haryana, Rajasthan and Uttar Pradesh was to the extent of 2.5 million tonnes whereas Himachal Pradesh, Jammu and Kashmir and Punjab do not have any cement plant at present. Consumption in the entire region was around 4.3 million tonnes. Eastern India again is an area of some deficit though Bihar, Orissa and Meghalaya are among the surplus individual states. Assam, Tripura, Manipur, Arunachal Pradesh, Nagaland, Mizoram and Sikkim are the states in this region without any cement

unit. As against an output of 2.7 million tonnes this region consumed nearly three million tonnes in 1975 showing a deficit of around 300,000 tonnes.

Western and southern states have a comparative concentration of cement industry. Gujarat had a surplus of nearly 300,000 tonnes in 1975 while Madhya Pradesh produced 2.8 million tonnes yielding a surplus of 2.2 million tonnes for the neighbouring areas. However, with an output of 600,000 tonnes during 1975, Maharashtra had a deficit of nearly two million tonnes. The overall surplus of the western region was 1.2 million tonnes arising out of five million tonnes of output and 3.8 million tonnes of consumption. Three southern states—Andhra Pradesh, Tamil Nadu and Karnataka—are all yielding surpluses. Only Kerala does not have any unit at the moment, as also Pondicherry and

Andaman and Nicobar islands. During 1975 Andhra Pradesh yielded a surplus of 400,000 tonnes out of an output of 1.6 million tonnes. Tamil Nadu surplus was 1.4 million tonnes out of an output of 2.6 million tonnes. Karnataka also yielded a surplus of one million tonnes out of an output of 1.8 million tonnes. The southern region had

TABLE II
Cement Output : 1976

Month	Production (tonnes)
January	1,652,000
February	1,524,000
March	1,638,000
April	1,503,000
May	1,615,000
June	1,590,000
July	1,538,000
August	1,406,000
September	1,587,000
October	1,562,000
November	1,554,000*
December	1,554,000*
Total	18,533,000

*Estimated.

an overall surplus of 2.3 million tonnes out of a regional output of six million tonnes.

The regional disparity in cement is partly accentuated by the pattern of consumption. Table III also shows that northern India which is deficit in production has high per capita cement consumption. For instance in 1975 Punjab and Haryana with 55.5 kg and 51.5 kg per capita respectively, were among the leaders in consumption of cement. It is significant to note that between

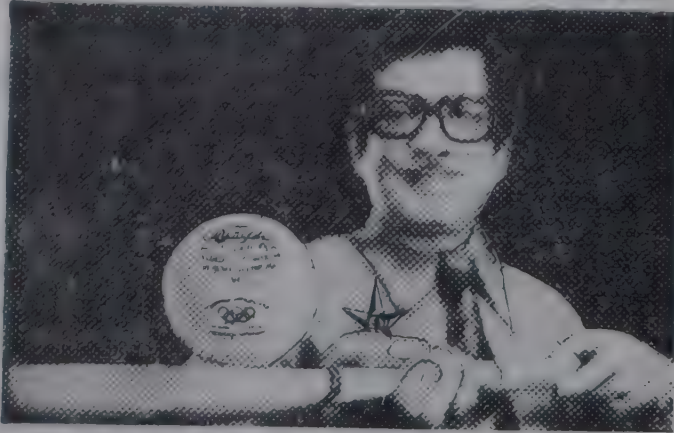
TABLE I
Cement Production in India : 1968-76
(All varieties including White Cement)
(In million tonnes)

Year	Capacity	Production	% age Utilisation
1968	14.76	11.94	81
1969	15.60	13.92	87
1970	17.36	13.96	80
1971	19.39	14.93	77
1972	19.74	15.79	80
1973	19.74	14.99	76
1974	19.86	14.33	72
1975	21.11	16.34	77
1976*	21.26	18.55	87

*Estimated

Source : Ministry of Industry

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Hans Raj Mahajan, a victim of Partition, was forced to sell fruits and vegetables for a living. Undeterred, he scraped together Rs. 100 and started re-building the sports goods business he had lost. But he sorely needed finance along the

way. The Bank of India recognized his merit and came to his help with a large loan.

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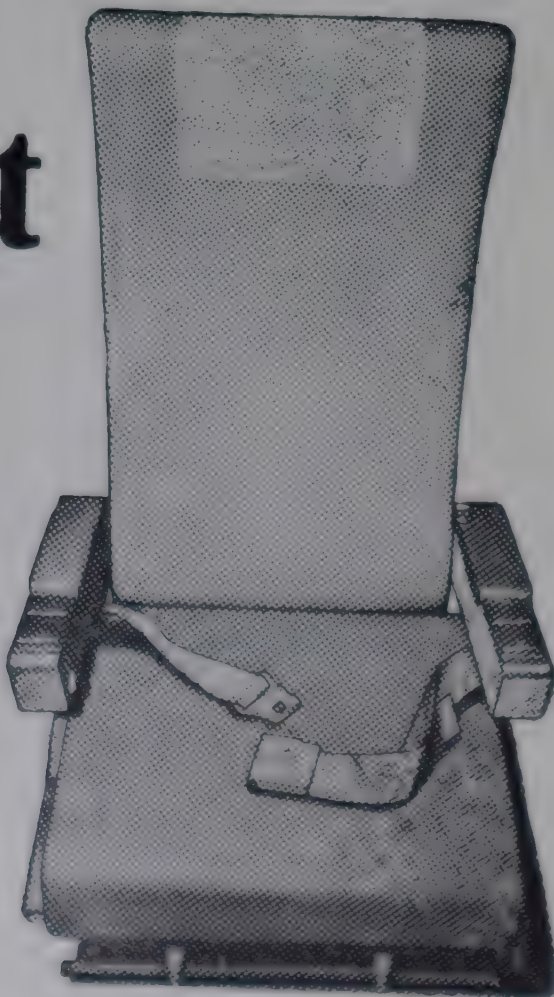
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and 1975 the level of consumption increased substantially in these two states. Gujarat and Sikkim with 44.5 and 48.5 kg per capita respectively were other two states with high level of cement consumption. Western India as a whole has a per capita consumption of 29.4 kg which is higher than that of other areas. Northern India's average of 26.6 kg per capita appears low because consumption in UP and Rajasthan, two of the most populous states in the region, have a rather low per capita consumption of nearly 18 kg. Eastern India as a whole has a per capita consumption of nearly 19 kg which includes Bihar and Orissa with per capita consumption of around 15 kg.

TABLE III
Statewise Production and Per Capita Consumption of Cement in 1975

Sl. No.	Region/State	Production (in '000 tonnes)	Total consumption (in '000 tonnes)	Deficit — or Surplus +	Population (in '000)	Per capita consumption in kgs	
						1975	1974
NORTH							
1.	Chandigarh	—	60	—60	278	215.83	169.12
2.	Delhi	—	416	—416	4855	85.68	97.06
3.	Haryana	444	563	—119	10929	51.51	35.19
4.	Himachal Pradesh	—	56	—56	3613	15.50	15.84
5.	Jammu & Kashmir	—	169	—169	4990	33.87	33.51
6.	Punjab	—	810	—810	14584	55.54	40.26
7.	Rajasthan	1427	519	+908	28198	18.41	17.15
8.	Uttar Pradesh	647	1706	—1059	94280	18.10	20.40
	Total	2518	4299	—1781	161727	26.58	25.41
EAST							
1.	Assam	—	283	—283	16385	17.27	12.43
2.	Bihar	1603	913	+690	60456	15.10	14.75
3.	Orissa	815	376	+439	23763	15.82	14.29
4.	West Bengal	168	1244	—1076	48336	25.74	19.85
5.	Meghalaya	65	31	+34	1097	28.26	32.57
6.	Tripura	—	30	—30	1688	17.77	9.07
7.	Manipur	—	38	—38	1165	32.62	18.47
8.	Arunachal Pradesh	—	13	—13	507	25.64	8.46
9.	Nagaland	—	18	—18	546	32.97	40.97
10.	Mizoram	—	4	—4	369	10.84	8.31
11.	Sikkim	—	11	—11	227	48.46	—
	Total	2651	2961	—306	154539	19.16	16.18
WEST							
1.	Gujarat	1650	1308	+342	29376	44.53	41.01
2.	Maharashtra	597	1632	—1035	54861	29.75	31.49
3.	Madhya Pradesh	2837	839	+1998	45759	18.34	18.27
4.	Goa, Daman, Diu, Dadra and Nagar Haveli	—	72	—72	1011	71.22	61.62
	Total	5084	3851	+1233	131007	29.40	29.24
SOUTH							
1.	Andhra Pradesh	1585	1163	+422	46870	24.81	23.54
2.	Tamil Nadu	2613	1187	+1426	44413	26.73	27.76
3.	Karnataka	1821	819	+1002	31662	25.87	24.83
4.	Kerala	—	526	—526	23319	22.56	20.14
5.	Pondicherry	—	20	—20	511	39.14	44.00
6.	Andaman, Nicobar & Laccadives	—	19	—19	160	112.50	96.15
	Total	6019	3734	+2285	146935	25.41	24.70
	Grand Total	16272	14845	+1427	594208	24.98	23.68

Note : (I) Cement availability from Wuyan factory 7297 tonnes is not taken into account.

(II) Population figures are taken from the Registrar of Census, but these are provisional.

Source: Ministry of Industry.



*Your hands have spoken love.
We know.
They have smoothed wrinkled brows.
Wiped tears.
Awakened to ecstasy, a beloved.
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the implements of work
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OR WRITE TO:

Directorate of Tourism, Tele Nos: 2449/3648/
J&K Government, 6985 & 6987
Srinagar-Kashmir. Gram: 'Tourism'

two states along with
ram constitute the area
the lowest cement consump-
in the country. It may
observed that between 1974
1975 consumption in the
ern region increased from
kg to 19.2 kg on per
basis.

ne high cost of transpora-
of cement has made
necessary for the planners
reduce regional disparity
far as possible. Conse-
tly, efforts are being
e to install more units in
northern and eastern re-
es of the country. For
ance nearly 50 per cent of
approved projects for

cement in the private sector
and 50 per cent in the public
sector are located in the nor-
thern and eastern states. Im-
portant locations approved
being Paonta, Samloti and
Gagal in Himachal Pradesh,
Bhupendra in Haryana, Dalla,
Chunar and Pithoragarh in
Uttar Pradesh, Patan, Nim-
bhara and Banas in Rajasthan
and Basholi and Khrew in
Jammu & Kashmir which will
add a capacity of nearly 5.25
million tonnes of cement to
northern India.

Similarly the capacity of
four million tonnes is to be
added in the states of Bihar,
West Bengal, Orissa, Assam

and Meghalaya in both the
private and public sectors.
Important units in Bihar are
to be located at Shahabad,
Japla, Dalmianagar and
Khalari, in Orissa at Barbil,
Rajgangpur and Rourkela, in
West Bengal at Asansol, Durga-
pur, Purulia and Bhatar. Three
units are to be established in
Meghalaya at Cheerapunji,
Garo Hills and Humshorgi.
This additional capacity is to be
accompanied by an additional
capacity of 4.8 million tonnes
in the west zone and 6.2 million
tonnes in the south zone so
that there will be some rational
dispersal of the location of
cement units (Table IV).

At present the cement in-
dustry in this country is domi-
nated by the ACC, which has
17 units all over the country
with an installed capacity of
6.98 million tonnes. Its out-
put during 1976 was nearly
6.31 million tonnes. Other 28
units in the private sector have
a capacity of 11.82 million
tonnes, their output during
1976 being nearly 10.49 million
tonnes. Public sector which
has been a recent entrant to
this field, already has eight
units in operation with an
installed capacity of 2.49
million tonnes. Production in
the public sector during
1976 was 1.97 million tonnes.



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Man's first step on the moon was a giant stride for humanity. And from those celestial heights, our Good Earth looked a picture of peace and serenity.

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- *Our research labs seek to upgrade technology to give the nation a more modern outfit.*
- *The cooperatives help members achieve happy moments in life.*



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The pattern of production in cement industry is gradually changing so that the public sector and the new entrepreneurs in the private sector are gaining importance. Only five projects have been approved by the government for ACC and these are likely to add an installed capacity of 1.88 million tonnes. After the execution of expansion schemes this group is likely to have a total installed capacity of 8.85 million tonnes. Other projects approved for the private sector large houses may add nearly five million tonnes (Table IV). Projects approved in respect of private sector units other than those of large houses, also may add a capacity of nearly five million tonnes (Table V). The

entire private sector including the ACC therefore is likely to have after completion of the approved schemes, an installed capacity of nearly 30 million tonnes.

The public sector projects which have been approved in various states are likely to yield and installed capacity of 8.68 million tonnes thereby taking the total installed capacity in the public sector to 11.17 million tonnes in the next few years (Table VI). It is important to note that efforts are being made in the public sector to develop the cement industry in highly deficit state such as Himachal Pradesh, Jammu and Kashmir, Assam and Meghalaya. The Cement Corporation of India

has accepted the challenging job of setting up two cement plants each of 200,000 tonnes per annum capacity in such difficult regions as Bokajan in Mikir Hills area in Assam and Rajban in Himachal Pradesh. Establishment of these plants will relieve strain on railways for transporting cement over long distances, besides creating job opportunities for local weaker sections of society in these highly backward regions.

The Bokajan plant in Assam would be going into production soon. The trial production and despatch of cement from this factory have already commenced from October, 1976. The cement produced from this factory is of good quality and is getting good

reception in the market. In fact the company has already produced about 30,000 tonnes of clinker in this factory. Oil well cement and sulphate resistant cement are proposed to be produced in this factory. If oil well cement of standard specifications could be produced within the country, there will be a saving in foreign exchange to the extent of about two crores of rupees per year as about 10,000 tonnes of this type of cement is being imported. There is great potentiality of export market for sulphate resistant cement as well as oil well cement for oil drilling purposes in West Asia and south-east Asia at a high price.

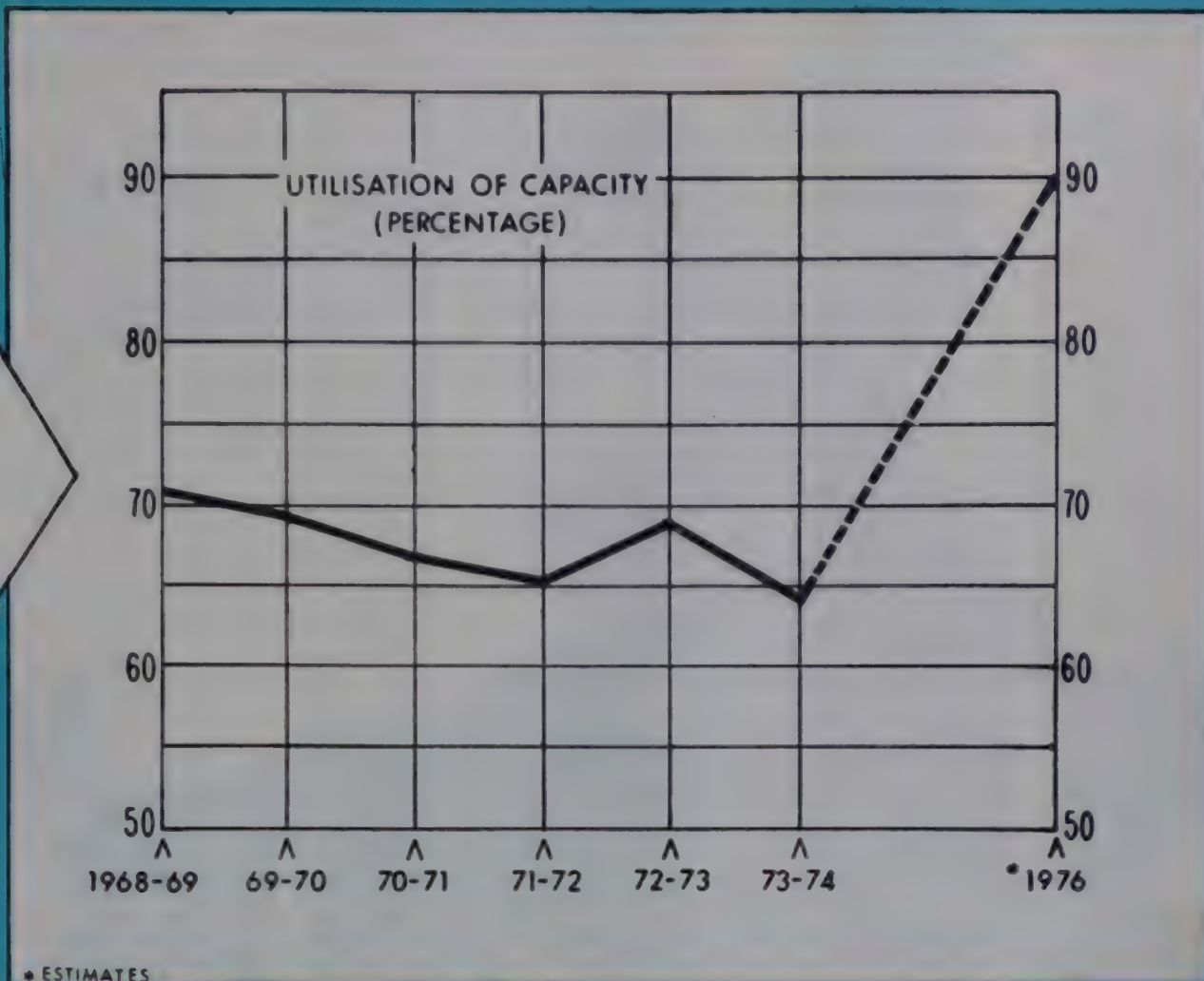
The Cement Corporation has five new projects in hand and

TABLE IV
Cement Projects Approved in Private Sector—Large Houses

State	Sl. No.	Name of the party	Location	Capacity (In lakh tonnes)	
NORTH ZONE					
Rajasthan	1.	Kesoram Cement	Patan	3.00	
	2.	J.K. Synthetics	Nimbhera	4.20	
	3.	D.C.M	Banas	8.00	15.20
Haryana	1.	A.C.C.	Bhupendra	2.53	2.53
Himachal Pradesh	1.	A.C.C	Gagal	4.00	4.00
Total North					21.73
EAST ZONE					
Bihar	1.	Sone Valley	Japla	3.30	
	2.	Rohtas Industries	Dalmianagar	2.22	
	3.	A.C.C.	Khalari	1.49	7.01
West Bengal	1.	Ashoka Cement	Asansol	2.60	
	2.	Durgapur Cement	Durgapur (3rd stage)	2.00	4.60
Orissa	1.	Orissa Cement	Rajgangpur	3.99	3.99
Total East					15.60
WEST ZONE					
Madhya Pradesh	1.	Century Cement	Maihar	7.50	
	2.	Mysore Cement	Narsingarh	4.00	
	3.	Modi Spg. & Wvg. Mills	Jagadapur	4.00	15.50
Gujarat	1.	A.C.C.	Porbandar	2.00	2.00
Total West					17.50
SOUTH ZONE					
Tamil Nadu	1.	Dalmia Cement (Bharat)	Dalmiapuram	0.66	0.66
Karnataka	1.	A.C.C.	Wadi	3.30	3.30
Andhra Pradesh	1.	Kesoram Cements	Peddapalli	4.50	4.50
Total South					8.46
Grand Total					63.29

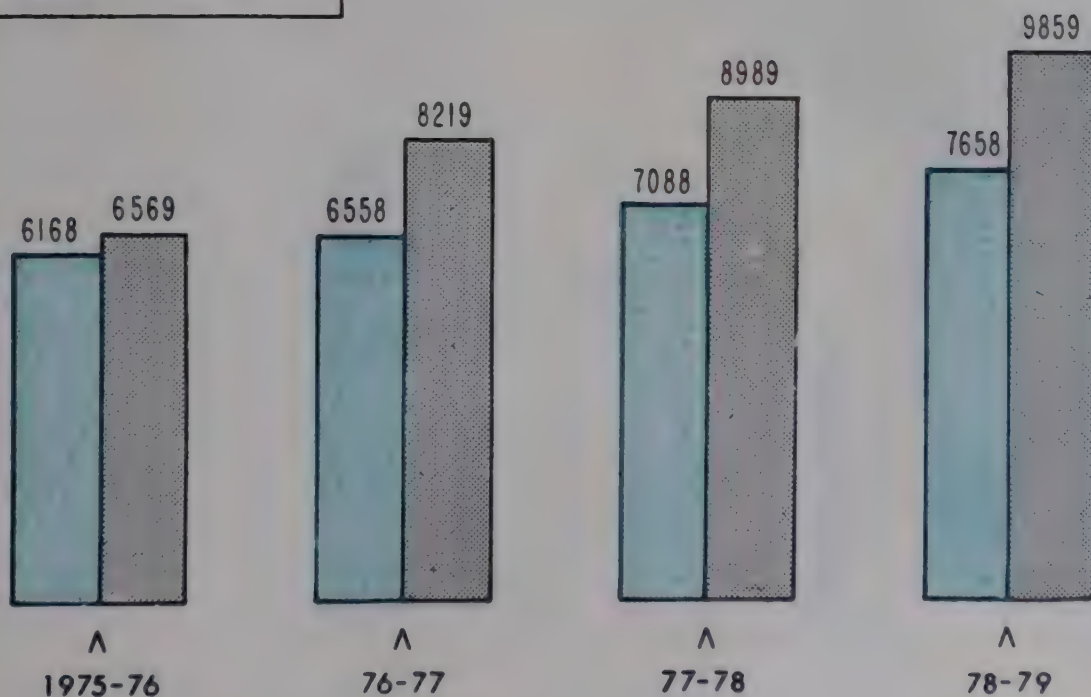
Source : Ministry of Industry

UTILISATION OF CAPACITY IN STEEL INDUSTRY



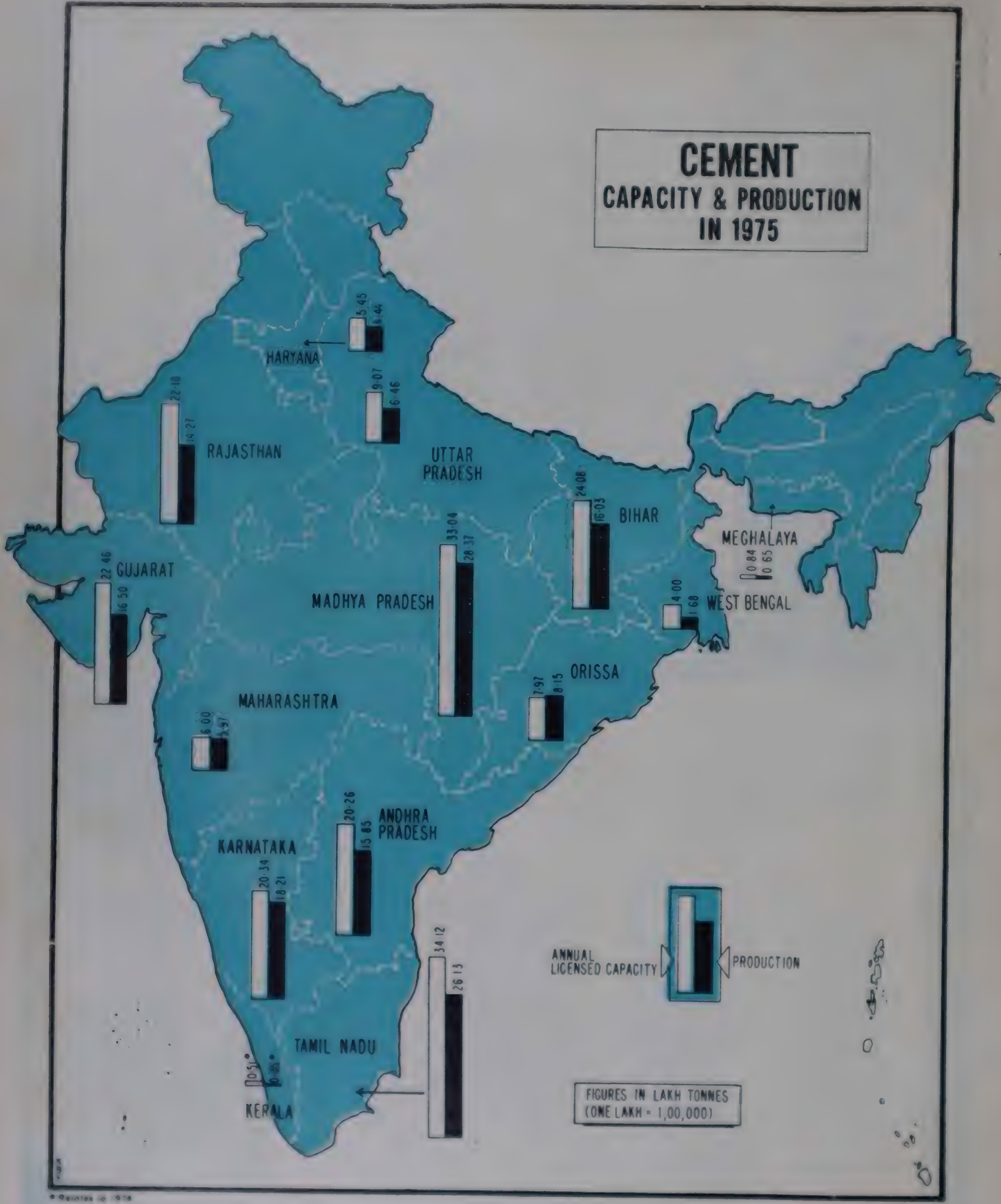
DEMAND
AVAILABILITY

THOUSAND TONNES



DEMAND & AVAILABILITY OF STEEL

CEMENT CAPACITY & PRODUCTION IN 1975



proposes to take up two more projects in the year 1977-78. The foundation stones for the Yerraguntla, Neemuch and Akaltara projects have been laid recently. The work of Mandhar expansion scheme, based on the utilisation of blast furnace slag, a waste material from Bhilai steel plant, will increase the capacity of Mandhar plant from 200,000 tonnes to 380,000 tonnes per year. This project is expected to be commissioned by the end of 1977. The Rajban project is in the advanced stage of construction and about 60 to 70 per cent of the machinery

has also arrived at plant site. This project is also expected to be commissioned by the end of 1977.

The other three projects at Akaltara, Neemuch and Yerraguntla, each with 400,000 tonnes per year capacity, have made sufficient headway. These projects are expected to be commissioned in the financial year 1978-79. In addition to these projects, the Corporation may take up two more projects each of 400,000 tonnes per year capacity at Tandur and Adilabad in 1977-78 after getting the final clearance from the Planning Commission. All the

new plants are of dry process in which latest technology has been incorporated. To avoid dust nuisance, all these new factories will have electrostatic dust precipitators, which are effective dust arresting devices.

Apart from the Cement Corporation of India various states have set up their own cement corporations to encourage the establishment of cement units. Himachal Pradesh Mineral and Industrial Development Corporation proposes to set up a unit with 200,000 tonnes capacity at Samloti. Similarly Jammu and Kashmir Minerals Ltd is establishing

two units with 200,000 tonnes capacity each at Basholi and Khrew. The Assam Industrial Development Corporation is also establishing a unit at Garampani with a capacity of 200,000 tonnes per annum. Similarly Meghalaya is likely to have three units, two being developed by Meghalaya Industrial Development Corporation at Garo Hills and Lumshong with a capacity of 400,000 tonnes and 200,000 tonnes respectively. Mawmluh-Cherra Cement Ltd is establishing a unit with 200,000 tonnes capacity at Cherrapunji.

Other states also are taking

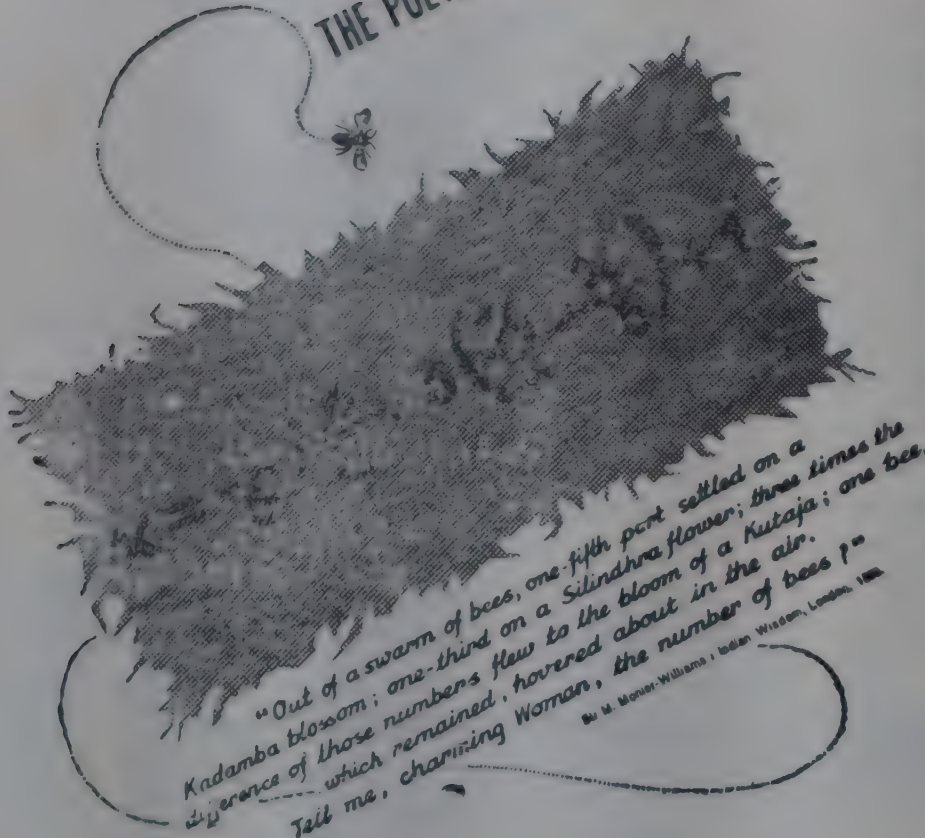
TABLE V
Cement Projects Approved in Private Sector other than Large Houses

State	Sl. No.	Name of the party	Location	Capacity (in lakh tonnes)	
NORTH ZONE					
Uttar Pradesh	1.	Rock Cement India	Kalsi Dehradun	1.00	
	2.	Dr. R.N. Jain	Near Dehradun	0.30	1.30
Haryana	1.	Mr. Vinod Kumar Jain	Jagadhari	0.30	0.30
Total North					1.60
WEST ZONE					
Maharashtra	1.	Vidarbha Cement Ltd.	Rajura	3.30	
	2.	Cement & Chemicals	Chanaka	4.00	
	3.	Mr. V.P. Agarwal	Rajura	4.00	11.30
Gujarat	1.	D L. Chowgule	Veraval	4.00	
	2.	Himalaya Cements Ltd.	Ranavav	0.45	4.45
Total West					15.75
EAST ZONE					
Bihar	1.	R.P. Sinha Cement	Shahabad	2.00	2.00
Orissa	1.	Mr. B.M. Mehta	Barbil	1.00	1.00
Total East					3.00
SOUTH ZONE					
Tamil Nadu	1.	Madras Cement	Tulukapatti	2.10	2.10
Andhra Pradesh	1.	Panyam Cements	Sullurpet	0.45	
	2.	Tadpatri Cements Ltd.	Tadpatri	4.00	
	3.	Panyam Cements	Yadiki	4.00	
	4.	Andhra Cement	Bonakallu	6.60	
	5.	Andhra Cement	Vijayawada	1.00	16.05
Karnataka	1.	Bagalkot Udyog	Bagalkot	3.30	
	2.	Nagargali Cement Co. Ltd.	Nagargali	4.00	
	3.	M. Basavarajappa	Almatti	4.00	
	4.	Panyam Cements	Tornagallu	1.00*	11.30
Total South					29.45
Grand Total					49.80

*Grinding Plant—Capacity not to be added.

Source: Ministry of Industry

THE POETRY OF ALGEBRA



How India gave the world the logic of indeterminate equations.

History owes a debt to three Indian mathematicians of 1500 years ago who developed Algebra to give meaning to the meaningless. Bhaskara, who originated the radical signs. Brahmagupta, who created the symbols. Aryabhata, who worked out the first equations. Original thinkers, they expanded man's horizon in his unending search for knowledge. A search that continues today in new directions with newer tools . . . among them, a machine that helps man in more ways than any other invention in history: the computer. We are proud that IBM introduced the manufacturing of computers and other data processing equipment in India, which are helping the nation meet the challenge of building a new tomorrow.

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STABLE BLEACHING POWDER
HYDROCHLORIC ACID
LIQUID CHLORINE
CALCIUM CHLORIDE

ALUMINIUM SULPHATE
POTASSIUM CHLORATE
SILICON TETRACHLORIDE
BROMINE

eastern-83-A

initiative to establish cement units. For instance, Uttar Pradesh State Cement Corporation is setting up three units at Dalla, Chunar and Pithoragarh with installed capacity of 800,000 tonnes, 1.8 million tonnes and 1,00,000 tonnes respectively. In West Bengal, the Purulia unit is being set up by West Bengal Industrial Development Corporation with a capacity of 1,00,000 tonnes and the Bhatar unit with 90,000 tonnes capa-

city by the West Bengal Housing Board. Orissa Industrial Development Corporation is setting up a unit at Rourkela with a capacity of 600,000 tonnes. Gujarat Industrial Investment Corporation has got a scheme approved for a cement unit with a capacity of 500,000 tonnes to be set up at Jafraabad. Andhra Pradesh Industrial Development Corporation proposes to set up a unit at Yagatyal with a capacity of 400,000 tonnes. Tamil

Nadu Industrial Development Corporation has the approved schemes at Alamgulum and Ariyalur with an installed capacity of 300,000 and 500,000 tonnes respectively.

The execution of various schemes in the private and public sectors is likely to yield sufficient additional capacity by 1978-79, so that the fifth Plan target of 23.5 million tonnes of capacity will be achieved. The target takes into account the additional demand

arising during the next few years as well as some surplus for exports. The Planning Commission is understood to have suggested that cement exports be raised to 1.5 million tonnes a year for five years, beginning 1977-78. Exports, canalised through the State Trading Corporation, are estimated to be one million tonnes, valued at about Rs 35 crores in 1976-77. Of this, exports in the first six months of the year had been

TABLE VI
Schemes Approved in Public Sector

State	Sl. No.	Name of the party	Location	Capacity (In lakh tonnes)	
NORTH ZONE					
Himachal Pradesh	1.	Cement Corporation of India Ltd.	Paonta (Rajban)	2.00	
	2.	H.P. Mineral & Ind. Dev. Corporation	Samloti	2.00	4.00
Uttar Pradesh	1.	U.P. State Cement Corp.	Dalla	8.00*	
	2.	U.P. State Cement Corp.	Chunar	16.80	
	3.	U.P. State Cement Corp.	Pithoragarh	4.32	21.12
Jammu & Kashmir	1.	J & K Minerals Ltd.	Basholi	2.00	
	2.	J & K Minerals Ltd.	Khrew	2.00	4.00
Total North					29.12
EAST ZONE					
Assam	1.	Cement Corporation of India Ltd.	Bokajan	2.00	
	2.	Assam I.D.C.	Garampani	2.00	4.00
West Bengal	1.	West Bengal I.D.C.	Purulia	4.00	
	2.	West Bengal Housing Board	Bhatar	0.90	4.90
Meghalaya	1.	Mawmluh-Cherra Cement Ltd.	Cherrapunji	2.00	
	2.	Meghalaya I.D.C.	Garo Hills	4.00*	
	3.	Meghalaya I.D.C.	Lumshong	2.00	4.00
Orissa	1.	Orissa I.D.C.	Rourkela	6.00	6.00
Total East					18.90
WEST ZONE					
Gujarat	1.	Gujarat Ind. Investment Corporation Ltd.	Jaffrabad	5.00	5.00
Madhya Pradesh	1.	Cement Corporation of India Ltd.	Neemuch	4.00	
	2.	Cement Corporation of India Ltd.	Mandhar	1.80	
	3.	Cement Corporation of India Ltd.	Akaltara	4.00	9.80
Total West					14.80
SOUTH ZONE					
Andhra Pradesh	1.	Cement Corporation of India Ltd.	Adilabad	4.00	
	2.	Cement Corporation of India Ltd.	Tandur	4.00	
	3.	Cement Corporation of India Ltd.	Yerranguntla	4.00	
	4.	Andhra Pradesh I.D.C.	Yagatyal	4.00	16.00
Tamil Nadu	1.	Tamil Nadu I.D.C.	Alangulam	3.00	
	2.	Tamil Nadu I.D.C.	Ariyalur	5.00	8.00
Total South					24.00
Grand Total					86.82

* Grinding Plant-Capacity not to be added.

Source: Ministry of Industry

देश के निर्माण कार्य में रत

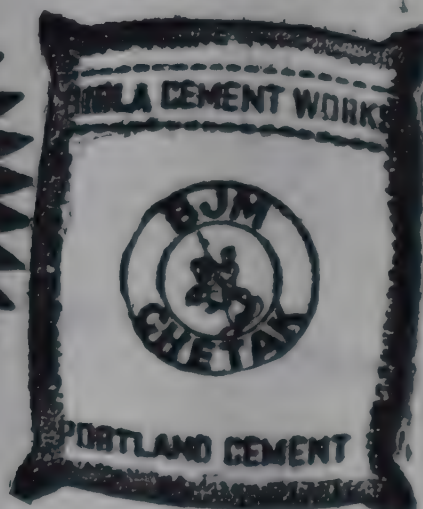


खजुराहो ब्रान्ड

चेतक ब्रान्ड



खजुराहो सीमेन्ट वर्क्स
ब्रान्ड (खजुराहो)



बिड़ला सीमेन्ट वर्क्स
चिह्नक (चेतक)

प्रो० बिड़ला जूट मैनुफैक्चरिंग कं० लि०, कलकत्ता-६
(सीमेन्ट विवीजन)

category, and would like to encourage them, apart from the massive licensed cement plants.

Installation of small units is to be encouraged for locations having small deposits of limestone and having limited demand. Special consideration is to be given to proposals aimed at (i) locating cement capacity in deficit areas; (ii) utilisation of industrial wastes such as blast furnace slag and fly ash; (iii) reduction in the incidence of packing cost by resorting to bulk distribution of cement and supply of ready-made concrete mixtures; (iv) maximisation of production out of the existing facilities by technological improvements and conversion from wet to dry process.

The standard capacity of cement plants has, however,

been 1000 to 1200 tonnes per day but in special locations depending upon the availability of limestone and other factors, smaller capacity of about 600 tonnes per day can prove economical. As there is considerable potential for export of cement to the neighbouring countries, proposals for large coastal plants mainly geared to exports have strong merit. Some machinery makers in this country have already developed and built plants of 900 and 1,200 tonnes capacity. The future plant size would perhaps be of 1,500 or 2,000 tonnes capacity. Plants up to 4,000 tonnes have been installed abroad. The main problem for installation of large-sized plants is the over-land transport of over-dimensional consignments. The railway transport of components for plants over 900 tonnes is

not possible. Most of these sites are not approachable by national highways, and the movement of heavy castings from HEC, Ranchi, as it is now, is difficult. Consequently a plant of 900 tonnes per day capacity is considered viable.

This country is practically self-sufficient in the supply of cement making machinery. There are 11 units with a total licensed capacity of 18 complete plants ranging from 600 to 1200 tonnes per day. The major units have composite workshops where machinery for other industries is also being manufactured. During the previous three years production in terms of value has been :

1973	Rs 6.35 crores
1974	Rs 10.17 crores
1975	Rs 7.00 crores

Evidently sufficient capacity

exists in the country to meet the requirements of fresh units to be established during the next five years subject to the proper distribution of the orders and sufficient notice being given. Most of the manufacturers are interested in handling full projects including erection and commissioning for establishing the superiority of their plants, in preference to remain as only fabricators for the designs of their competitive collaborators and to cater for the needs of other suppliers. The present delivery period for cement machinery is 27 to 30 months. This includes nine months for preparation of design and project drawings, and from 19 to 21 months for the manufacture of main machinery and procurement of finished imported and bought-out components.

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 7. Unemployment is being eradicated.
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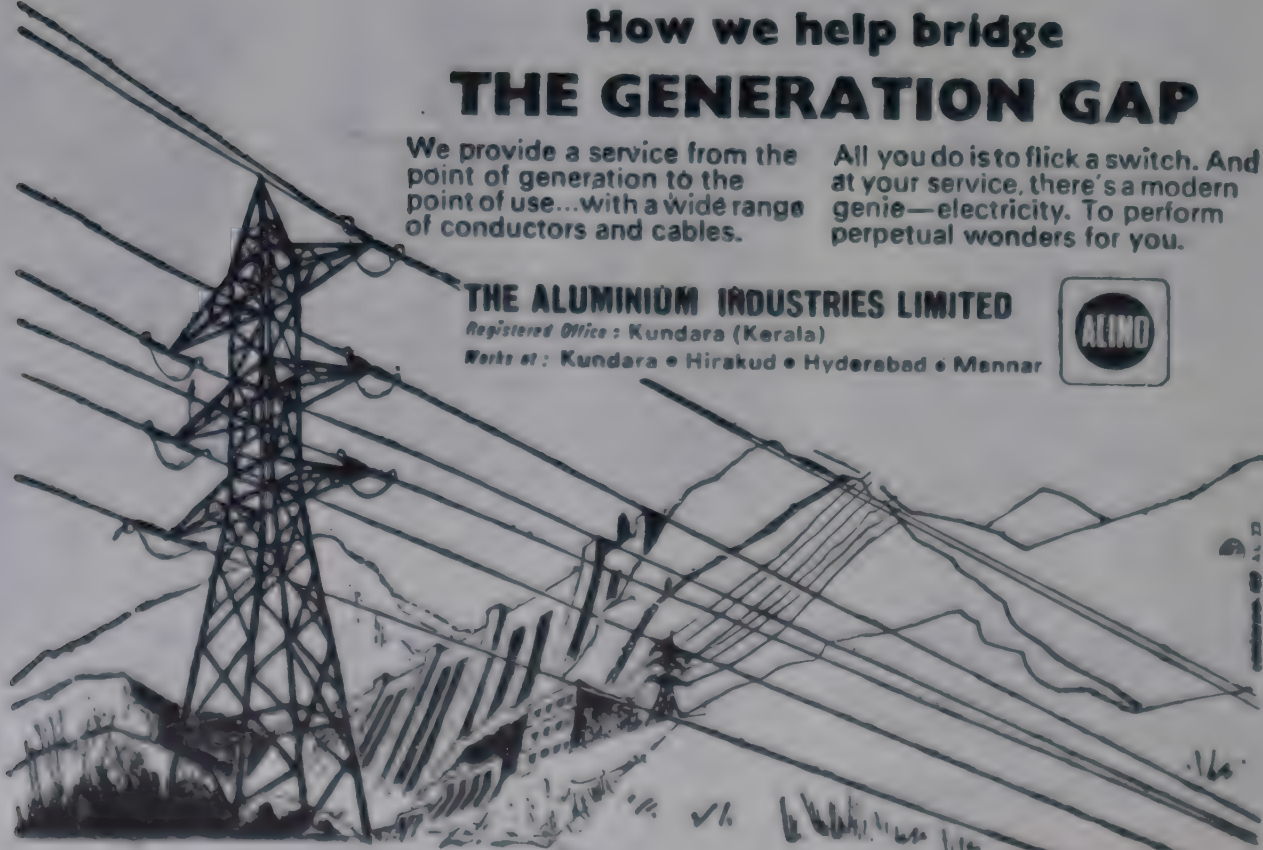
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Fertiliser industry: problems and perspectives

Paul Pothen

THE FERTILISER industry may be said to have had its beginnings in the early years of the century. However, investment of some significance in high technology areas of the industry took place at about the same time as the country's attainment of independence. Since then it has grown steadily and at an accelerating pace till today, in the industrial sector, it occupies pride of place next only to steel. The three decades have not been lived through without problems. But at the same time, the industry has contributed a technological content to the productive sector which has been far reaching in its effects. As its primary function it has transformed the agricultural front. We have come a long way from the Bengal famine.

constant debate

There has been a constant debate on the non-attainment of targets of consumption and production from Plan to Plan. Nevertheless, the figures show a steady growth in both aspects as is clear from Table I.

Since 1974-75 which is the last figure in the table, there has been a spurt in production. A 27 per cent increase in production to 1.508 million tonnes of Nitrogen has been registered for 1975-76 and the target for 1976-77 is 1.95 million tonnes. Many of the newer plants on which investment decisions were taken in the period 1968-72 have come into pro-

duction and account for a portion of the improvement. But there has been a significant improvement in plant utilisation. The general improvement of the industrial climate has had its effect on this industry in more than ordinary measure. As a complex industry it is singularly susceptible to external factors like power. To the extent that these inputs have improved, the industry's problems in these directions have been relieved with salutary effect on its own performance.

Installed capacity of plants in operation at the present and capacity of projects under implementation are detailed in Table II.

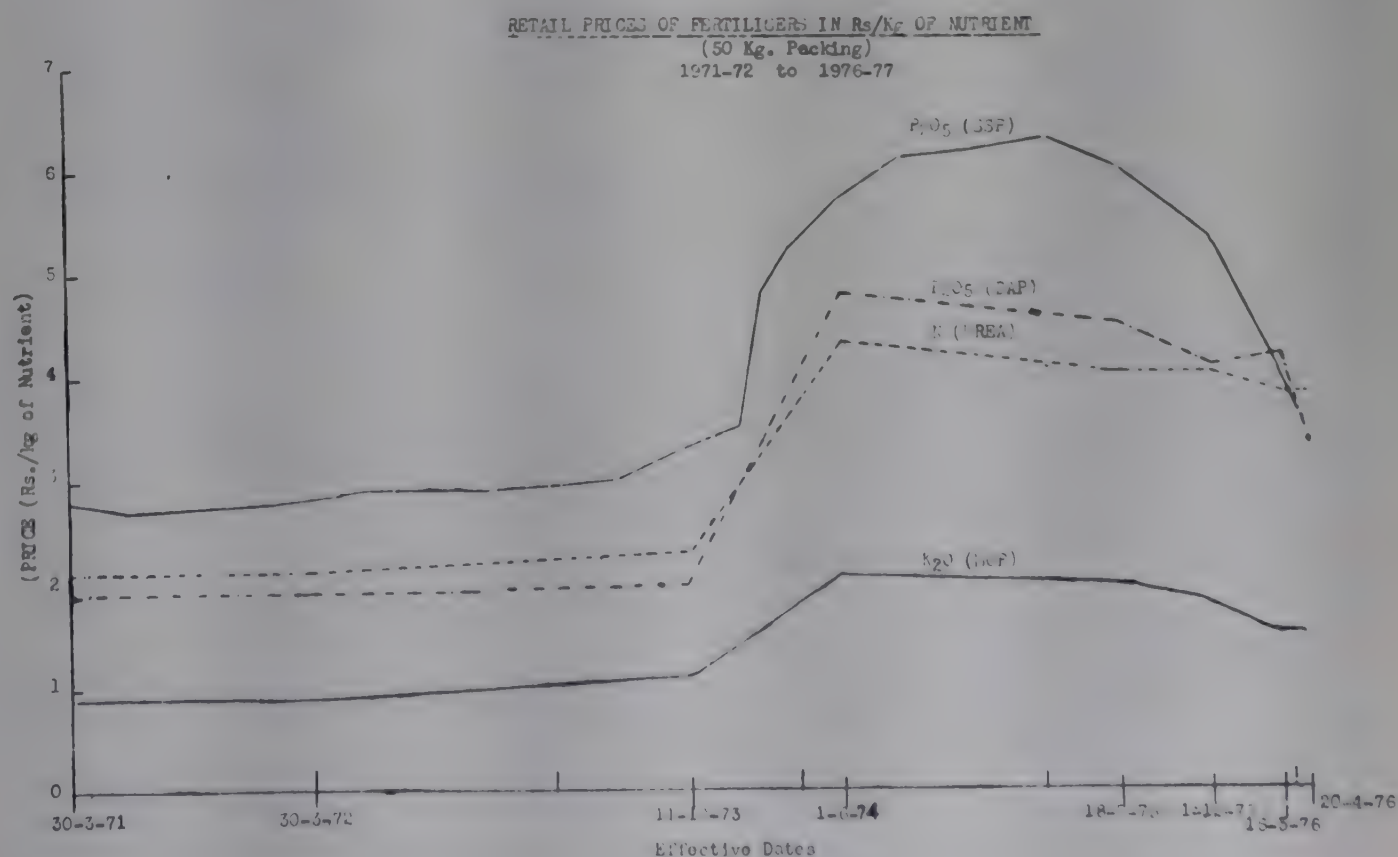
One of the major problems of the industry has been capacity utilisation. This problem

is compounded by the fact that there has been a compulsion to keep in operation plants which are outmoded and uneconomical. Some of the new investment such as at Sindri and Nangal has been in the direction of installing new plants which will enable the old units to be retired. The overall capacity utilisation of the Nitrogen sector of the industry which was 60 per cent in 1974-75 has improved to 63 per cent in 1975-76 and should show a distinctly higher figure in 1976-77. The best units in the industry have shown an excellent record of performance but there are units which are still facing technological problems which take time to solve. The Phosphate branch of the industry has by and large fewer production problems but

in recent years has been affected by the market. Here also, however, a distinct improvement is visible with a fair increase in the offtake.

Over the years when the industry has been developing, it has responded to technical trends elsewhere. Starting with Ammonium Sulphate, it had made products such as Calcium Ammonium Nitrate and Ammonium Sulphate-Nitrate before firmly opting for Urea as is currently the case. By 1979-80, out of the total operating capacity of 5561 metric tonnes of Nitrogen 4505 metric tonnes will be for Urea or 81 per cent. The chances are that the older plants making other products will be phased out and the proportion of Urea in the actual output will be even higher.

The problem of capacity



Mr Paul Pothen is the chairman of Fertiliser Association of India.

utilisation is inextricably linked with the availability of steady power. Process plants consist of whole chains of equipments which have all to function together to produce the final output. In the string are thermal and catalytic reactors and furnances which are not instantaneously responsive and take much time to come up to capacity and stabilise. This necessary expenditure of time is at the expense of productive periods and has to be expended every time there is an interruption. Even instantaneous fluctuations trigger a total shut-down and call for a long and systematic start up. Except to those in the industry this has never been obvious in spite of long years of explanations. Case studies of parallel plants have demonstrated the singular benefits that accrue from in-plant generation of power.

'total energy' operation

The ammonia/urea plants are generally large users of steam for process heating purposes. Suitable linking of the steam generations, power production and steam use can in most cases approximate to a "total energy" type of operation. In most modern plants the principal machines are driven by steam turbines so that the attainment of the "total energy" economies is easier. There is a case for newer plants to consciously plan their systems accordingly. If the critical loads in the plant are put on steam drive and internally generated power, one potent source of interruption of production can be avoided.

The newer plants are large producers and also have volumes of raw materials and fuels moving into the plant. Product movement has been on many occasions a problem

but not recently. The system of "block-rake" movement which has been widely accepted has smoothened the flow of materials, particularly product into the distribution system.

The considerable capacity developed for fabrication and supply of equipment and ancillaries has made it easier to manage the construction of new projects within the limits of the import policy. The schedules of construction of many projects have been seriously disturbed by the inability of indigenous producers to deliver to time and to quality standards. This situation has considerably improved of late, but there is still much to be gained by improving on this one aspect. Progressively, Indian industry is accepting the challenge of providing sophisticated machinery even against international competition. This is a heartening trend to which the specialised market of the fertiliser industry has been a prime cause.

Following on the oil crisis, the international price levels for capital machinery have increased considerably. This is the reflection of rising costs

all round. But the problem of those who wish to build a fertiliser factory has been made very difficult by the vast amount of capital involved. The higher capitalisation needs to be serviced at present at high interest rates and therefore produces an expensive product. The problems of financing and pricing are both involved. One reason why the industry is largely in the public sector at present and may remain so by 1979-80 is this. A comprehensive approach to pricing as is being currently evolved by the Marathe committee may ease the pricing question and also perhaps the

servicing of capital but the finding of the capital in the first place remains a problem.

As a most important input which will help sustain a self-sufficient agriculture, adequate supplies of fertiliser have to be ensured to the farmer. The indigenous output while growing steadily in volume has been substantially short of requirements. The difference has been made up by imports which have represented a considerable outflow of funds. This will be seen from Table II that uptill 1973-74 the imported material met approximately 50 per cent of the consumption. This proportion

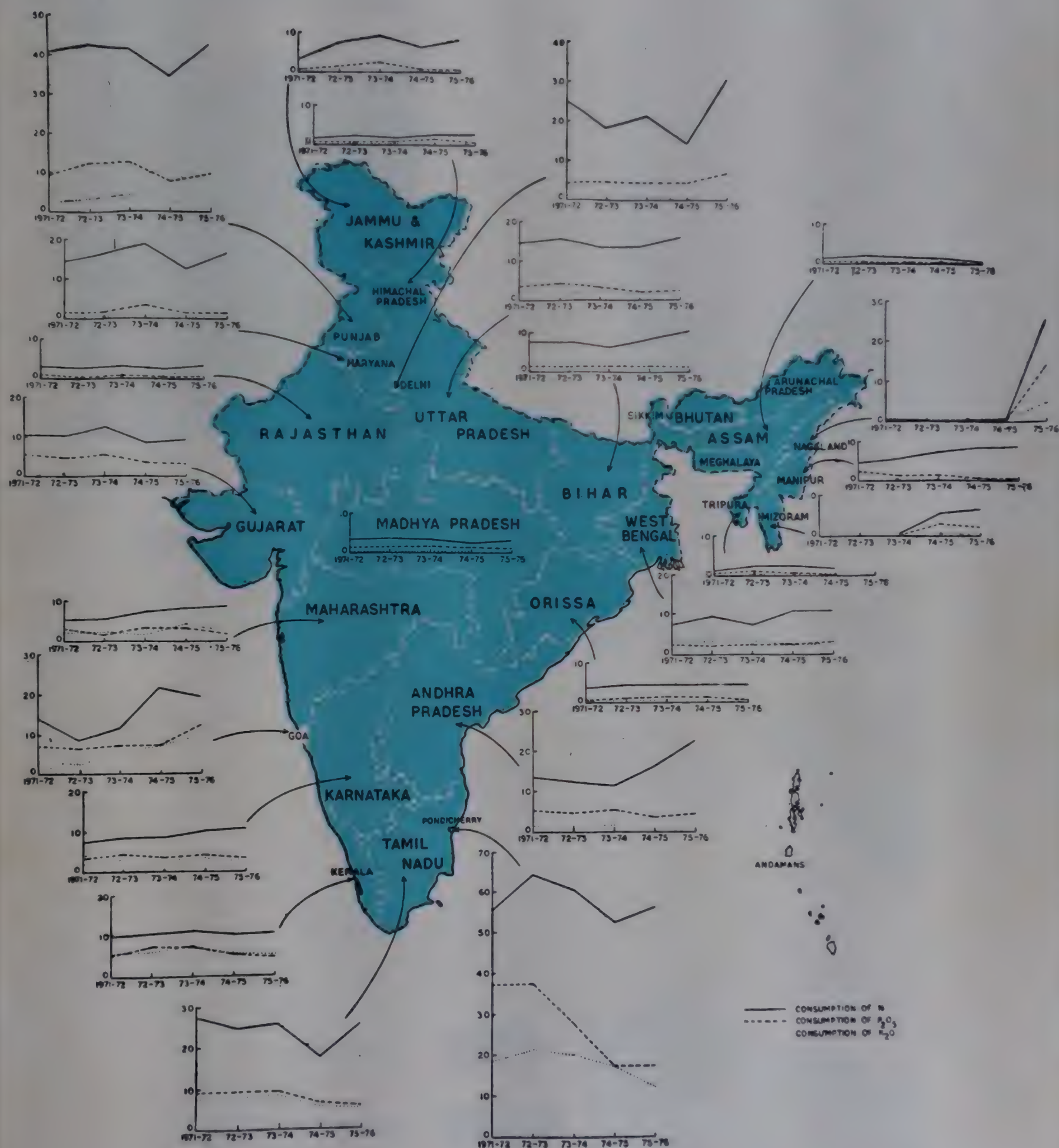
TABLE II
Capacity in Operation and Under Implementation
(in '000 tonnes)

	Nitrogen	Phosphates
Present capacity		
Public Sector	1135	294
Private Sector	1274	457
Cooperative Sector	215	127
Total	2624	878
Under implementation		
Public Sector	1873	491
Private Sector	471	82
Cooperative Sector	228	—
Total	2572	573
Grand Total	5196	1451

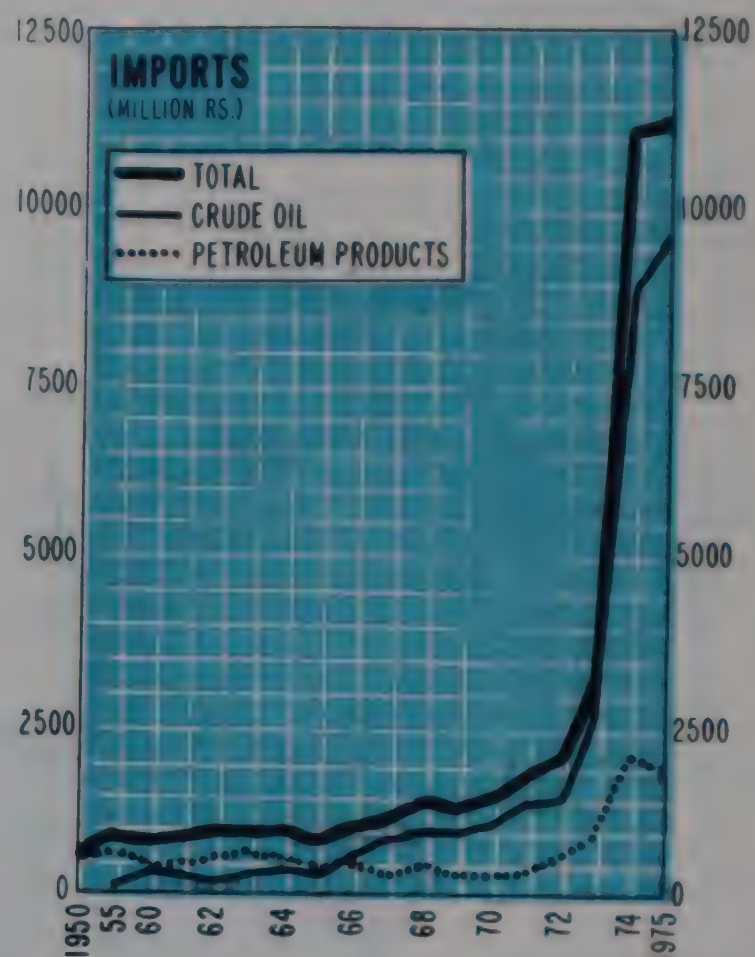
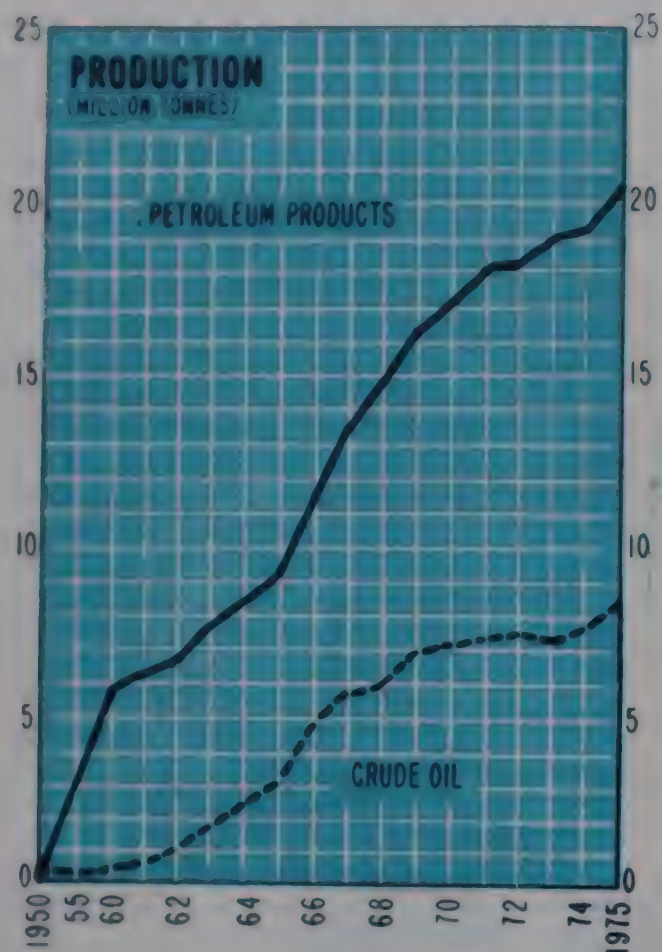
TABLE I
Production and Consumption of Fertilisers: 1952-53 to 1974-75
(in '000 tonnes)

		Nutrients				
		N		P ₂ O ₅		K ₂ O
		Production	Consumption	Production	Consumption	Consumption
Beginning of :						
First Plan	1952-53	53.1	57.8	7.4	4.6	3.3
Second Plan	1956-57	78.8	123.1	17.6	15.9	14.8
Third Plan	1961-62	154.3	291.5	65.4	63.9	28.0
Annual Plans	1966-69	309.0	838.7	145.7	248.6	115.7
Fourth Plan	1969-70	730.6	1360.3	223.7	419.8	209.4
Fifth Plan	1974-75	1186.6	1773.8	331.2	477.6	339.2

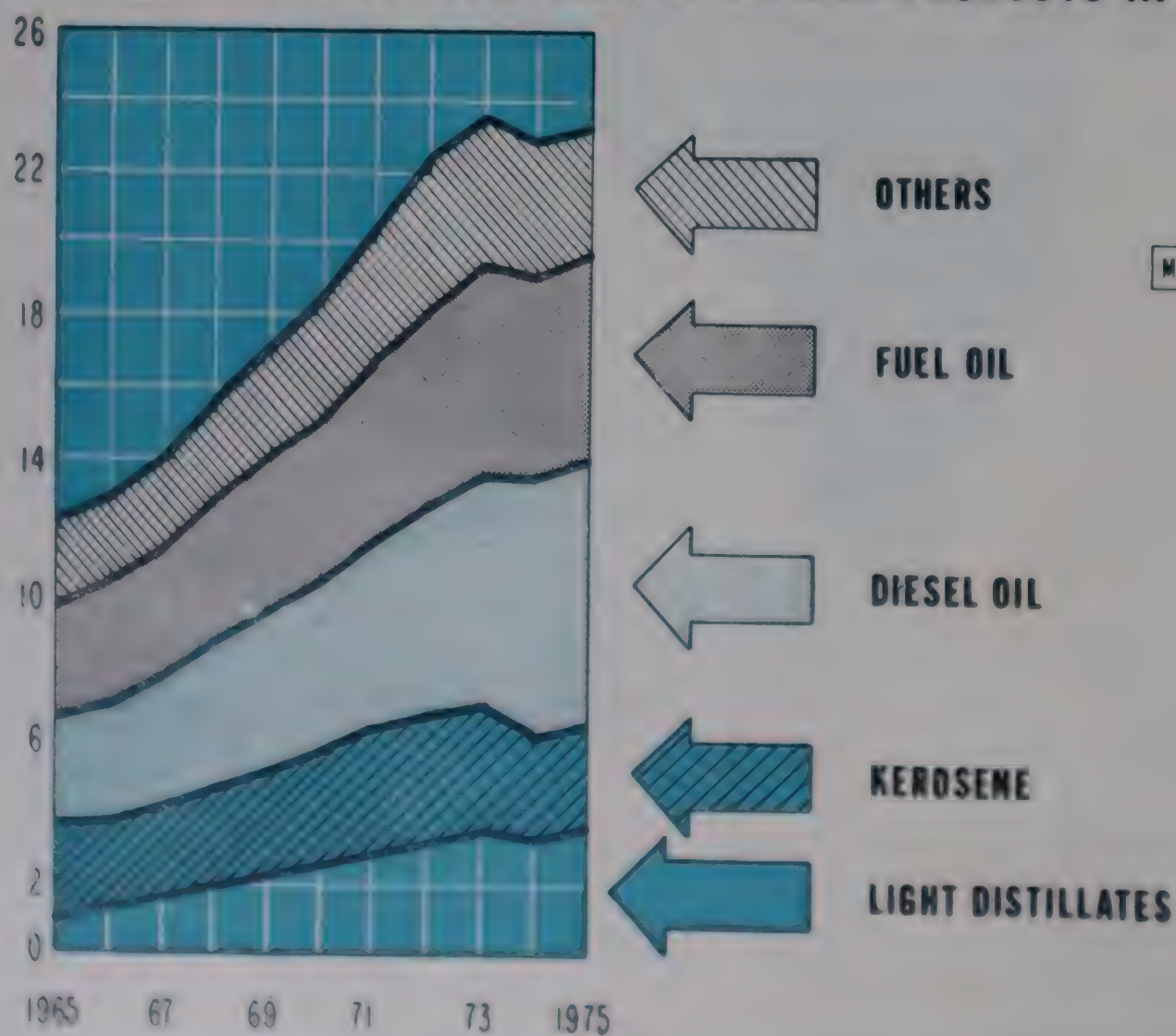
STATEWISE PLANTFOOD CONSUMPTION PER HECTARE OF AGRICULTURAL LAND (in kgs) (1971-72 to 1975-76)



GROWTH OF THE PETROLEUM INDUSTRY IN INDIA



GROWTH IN CONSUMPTION OF REFINED PRODUCTS IN INDIA



has been progressively reduced in the subsequent years due to the growth and better performance of our industry. It will be noted that while the proportion of imported material to overall consumption has reduced, the imported material in absolute quantities has remained fairly steady.

The import of fertilisers over the years has been handled by the central fertiliser pool which has been the residuary supplier. The overall import figures are impressive and India has been one of the biggest buyers in the international market. Under stable conditions of pricing this was a reasonable arrangement but the international commodity markets do undergo ups and downs and for fertiliser this period was 1973-74. A scarcity scare seized the market and prices skyrocketed. The same quantities of materials required three times the funds. This position will be clear from Table IV.

insulating the market

The central fertiliser pool has been insulating the internal market from these vagaries of pricing but following on the staggering increase in the import bill, the prices of all products had to be raised. Indigenous product was also priced higher and made to compensate the pool partly through remittances under an equalisation scheme. But the experience has proved that on such an important ingredient of the national economy as agricultural inputs the goal of self-sufficiency is not to be wavered from. Rather than spend funds on imports, funds must be found for growth of the industry. The lull in interest that sets in when external prices go down is quite often the precursor of panic. On the agricultural front there is no

room for such relaxation since poverty and privation are still with us in spite of record crop production.

TABLE IV
Fertiliser Imports

Year	Rs. in million
1969-70	1179
1970-71	794
1971-72	899
1972-73	1460
1973-74	1800
1974-75	5940

The Fertiliser Association of India has made projections of production and consumption which are considered necessary in the immediate future years. Covering the periods of the fifth and sixth Plans, the forecasts are given in Table V.

It will be noted that when the present crop of plants under construction or advanced planning are completed during the years 1979-80 and 1980-81, the indigenous production will very nearly approach the anticipated consumption reaching 95 and 97 per cent respectively in the two years. The difference between production and consumption widens again indicating the need for new starts

of projects which will cover the gap. Allowing for the progressive build up of capacity which is characteristic of all complex plants, seven to nine plants have to be on the anvil before long if the cycle of massive imports is not to be repeated.

In looking at Table V one may wonder if the growth pattern is not over-stated, considering that food production has reached good levels and direct correlation between fertiliser imports and food production is not always linear and self-evident. The answer to this is the growing population and a world increasingly dependent on the good producers to feed them. Much of the supremacy of American agriculture depended on the technical inputs which have made them the granary on which the world including ourselves have drawn upon unashamedly. A feeling for India's potential as an agricultural producer can be had when we think that our most productive areas are equal to the best in the world, even though, even in those areas, fertiliser use is far from the optimum. Vast areas of this country are still to get the

servicing that they need in terms of extension services and inputs. The many constraints that have established a seeming plateau in fertiliser use during the last four years has been the subject of anxious consideration at the annual seminar of the Fertiliser Association held in December 1976.

There is no doubt that the present consumption is nowhere near what needs to be achieved if agricultural production is to continue to be in a healthy state. The cost-benefit ratio of fertiliser use is of vital concern to the individual farmer as has been demonstrated by the fall in consumption of Phosphates and Potash after the price increases of June 1974. Step-wise reductions in price have since taken place. But the most significant step has been the grant of a subsidy on Phosphatic fertilisers with effect from March 1976. Progressive states such as Punjab and Haryana have added their own subsidies to ensure that the farmer is encouraged by a favourable cost-benefit ratio to invest in balanced fertilisation. The result has been a surge in consumption which shows that at

TABLE III

Production and Consumption of Nitrogen and Phosphates

(in '000 tonnes)

	Nitrogen			Phosphates		
	Consumption	Production	%age	Consumption	Production	%age
1969-70	1360.3	730.6	54	419.8	223.7	53
1970-71	1487.1	832.5	56	462.0	228.1	49
1971-72	1760.0	949.2	64	564.0	290.3	51
1972-73	1778.9	1054.5	59	587.4	330.3	56
1973-74	1829.1	1049.9	57	649.9	324.5	50
1974-75	1773.8	1186.6	67	477.6	331.2	69
1975-76	2148.0	1508.0	70	467.0	320.0	69
1976-77	2500.0	1950.0	78	600.0	455.0	76
(Current year projection)						

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least a good proportion of the farmers, particularly in progressive areas, are aware of the need and benefits but are deterred by the cost. A long term view of agriculture would seem to indicate the desirability of supporting the consumption of Phosphates and Potash by subsidies. This country will be in line with many others in such an action.

Many discussions at the seminar indicated that the economics of fertiliser use was quite favourable at present prices. The emphasis was on the economics and effective utilization. As an expensive input it is imperative that the best results should be obtained from its use. Here is where the work of universities and research establishments shows the way. Not only the new varieties of seeds and crop rotations that are being advocated but also such minutiae as the

period of sowing and the most efficient use of that important resource, namely water, have all a bearing on what fertilisers will do to the economics of the farmer.

All this knowledge which is the management input into agriculture needs to be carried to the farthest points and the lowliest peasant. Here indeed is the area where the fertiliser industry can do its most effective national service. Already its agronomists and field workers have taken the message to extensive areas. But what has been so far done is only a fraction of what needs to be done. Many reports were made of intensive work in the villages which indicate what can be achieved if the full strength of the industry is marshalled in an area where the industry must work in its own interest. The increasing consumption is a desirable result in the

TABLE V				
Forecasts for Production and Consumption of Fertilisers				
(in '000 tonnes)				
		Nitrogen		Phosphates
		Production	Consumption	Production Consumption
Fifth Plan				
1974-75	1186	1845	331.2	477.6
1975-76	1508	2148	320	467
1976-77	1950	2500	455	600
1977-78	2422	2814	730	738
1978-79	2842	3200	870	799
Sixth Plan				
1979-80	3416	3611	953	860
1980-81	3929	4048	967	924
1981-82	4140	4514	967	988
1982-83	4275	5008	988	1052
1983-84	4305	5530	1008	1120

country's interest. That this farming community to raise increase should be done in a its own standards and productivity is an end of which the manner and with an educational effort which will assist the industry can be proud.

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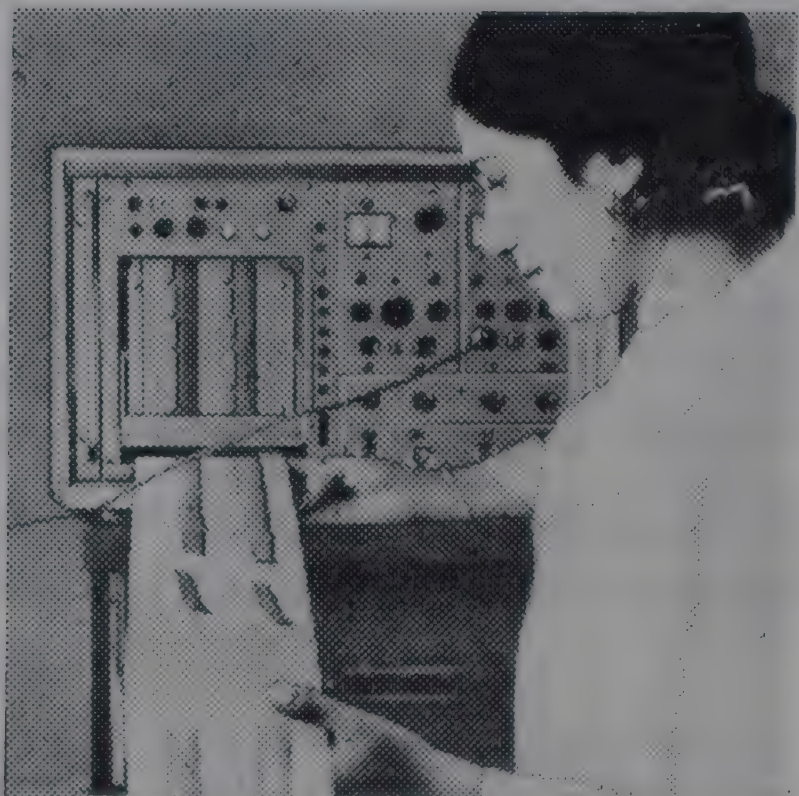
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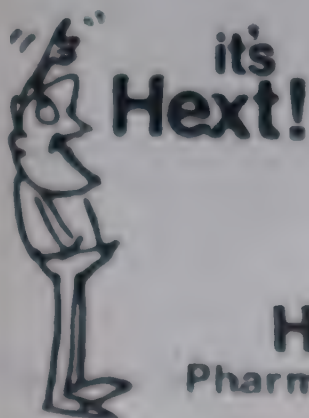
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End-productwise Capacity Installed Before and During Plan Periods 1966 to 1976-77

(April-March)

(Tonnes of material)

Fertiliser	Grade	Before	I Plan	II Plan	III Plan	Annual	Fourth	Fifth Plan		
		first Plan 1906-51	1951-52 to 1955-56	1956-57 to 1960-61	1961-62 to 1965-66	Plans 1966-67 to 1968-69	Plan 1969-70 to 1973-74	1974-75	1975-76	1976-77**
Ammonium phosphate	(20.6% N)	254730	355000	53800	—	100000	6600+	—	—	—
		(6)	(1)	(2)	(1)					
Cumulative total		254730	609730	663530	662930 ¹	970830 ²	945910	945910	945910	945910
		(6)	(7)	(9)	(8)	(11)	(11)	(11)	(11)	(11)
Urea	(46% N)	—	—	23470	253000	474320	1000000	482000	946500	660000
				(1)	(2)	(3)	(3)	(1)	(2)	(1)
Cumulative total		—	—	23470	276470	1031290	2780420	3262420	4208920	4868920
				(1)	(3)	(8)	(13)	(14)	(16)	(17)
Ammonium sulphate	(26% N)	—	—	121920	121920	121920	50000	50000	50000	50000
Calcium ammonium nitrate	(25% N)	—	—	380000	297000	—	—	—	—	—
				(1)	(1)	(1)	(1)	(1)	(1)	(1)
Cumulative total		—	—	380000	677000	560000@	800000	800000	800000	800000
				(1)	(2)	(2)	(2)	(2)	(2)	(2)
Ammonium chloride	(25% N)	—	—	8000+	17000*	—	—	—	—	—
				(1)	40640					
Cumulative total		—	—	8000+	65640	65640	64750	64750	64750	64750
				(1)	(2)	(2)	(2)	(2)	(2)	(2)
Single super-phosphate	(16% w.s. P ₂ O ₅)	492230	—	281060	345440	—	116990*	—	—	—
		(11)		(6)	(8)		+45000			
							(1)			
Cumulative total		492230	492230	773290	1118730	1249760	1420750	1420750	1420750	1414750
		(11)	(11)	(17)	(25)	(28)	(30)	(30)	(30)	(29)
Dicalphos	(18% P ₂ O ₅)	—	—	—	—	—	45000	45000	45000	45000
							(1)	(1)	(1)	(1)
Triple super-phosphate	(45% P ₂ O ₅)	—	—	—	—	—	—	—	—	540000
										(2)
Cumulative total		—	—	—	—	27000	27000	27000	27000	567000
						(1)	(1)	(1)	(1)	(3)
Ammonium phosphate sulphate (16-20-0)		—	—	16500	118500	—	—	—	—	—
				(1)	54480					
Cumulative total		—	—	16500	186480	186480	222980 ⁷	222980 ⁷	222980 ⁷	222980 ⁷
				(1)	(2)	(2)	(2)	(2)	(2)	(2)
Diammonium phosphate (18-46-0)		—	—	—	—	108000	108000	108000	108000	136000
						(1)	(1)	(1)	(1)	(2)
Nitrophosphate		—	—	—	270000	180000££	180000	180000	180000	180000
					(1)	(1)	(1)	(1)	(1)	(1)
Urea ammonium phosphate		—	—	—	—	260000	260000	260000	4975000 ³	497500
						(1)	(1)	(1)	(2)	(2)
NPK complex fertiliser		—	—	—	—	—	—	375500 ⁵	—	645000 ⁶
								(1)		(1)
Cumulative total		—	—	—	—	—	360000 ⁴	735500 ^{4,5}	735500 ^{4,5}	1380500 ^{4,5,6}

Notes: *Expansion. **Anticipated by 31-3-77. ££ On account of change over of grade from 16-3-0 to 20-20-0. Completely switched over to 15-15-15 since 1972-73. @ On account of change over of grade of FCI, Nangal and HSL, Rourkela from 0.5% N to 25% N. + Not meant for agricultural purposes. The figures in brackets indicate the number of manufacturing units.

¹ One by-product A/S factory was closed down during this period. ² One synthetic A/s factory was closed down during this period. ³ Constitutes grades 28-28-0, 20-20-5 and 14-35-14. Figure for 1975-76 takes into account the adjustments in capacity proposed in the expansion plan commissioned during the year. ⁴ Constitutes grades 17-17-17 and 14-28-14. ⁵ Constitutes grades 10-26-26, 12-32-16 and 14-36-12. ⁶ Constitutes grades 10-26-26 and 15-15-15. (160,000 tonnes) and, 17-17-17 and 28-28-0 (85,000 tonnes). ⁷ Constitutes grades 16-20-0 (51,480 tonnes) and 20-20-0 (171500 tonnes).

What a tale it would tell...

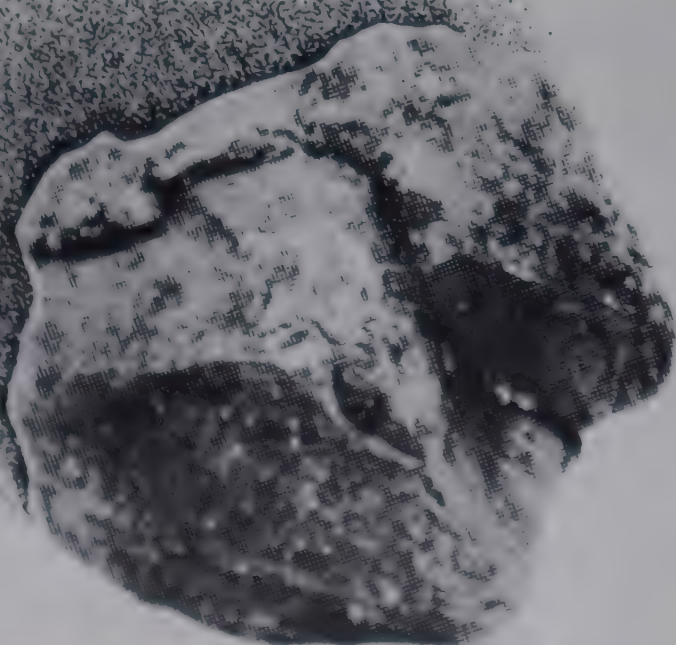
Of distant shores and strange lands where it travelled. Of its co-mates Manganese, Sillimanite and Non-Coking Coal who shared its journey. Of the mines it left behind, brewing with more activity. Of MMTC who fostered its adventure on the high seas. Of the foreign exchange it scuttled in to fill the Nation's holds. A jump of exports in iron ore from Rs. 23 crores in

1964-65 to Rs. 129 crores in 1975-76. And a spurt in total exports from Rs. 34 crores in 1964-65 to over Rs. 168 crores in 1975-76.



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Factorywise, Productwise Licensed Capacity of Fertilisers as on April 1, 1976

	Ammonium sulphate (20.6% N.)	Ammonium sulphate nitrate (26% N)	Calcium ammonium nitrate (25% N)	Urea (46% N)	Ammonium chloride (25% N)	Ammono-phosphate sulphate 16-20-0 & 20-20-0†	Diammo-nium phosphate 18-46-0
SOUTH	236,610	—	—	1,546,000	24,750	171,500†	—
Andhra Pradesh	—	—	—	—	—	(51,480)	—
Coromandel Fertilisers Ltd., Visakhapatnam	—	—	—	—	—	—	—
Hyderabad Chemicals & Fertilisers Ltd., Maula Ali	—	—	—	—	—	—	—
Andhra Fertilisers Ltd., Tadepalli	—	—	—	—	—	—	—
Andhra Sugars Ltd. Tanuku	—	—	—	—	—	—	—
Krishna Industrial Corp'n. Nidadavole	—	—	—	—	—	—	—
Kerala	(198,000)	—	—	(330,000)	(24,750)*	(171,500)†	—
The Fertilisers & Chemicals Travancore Ltd., Alwaye	198,000	—	—	—	24,750*	171,500	—
The Fertilisers & Chemicals Travancore Ltd. Cochin Unit, Ambelamedu	—	—	—	330,000	—	—	—
Karnataka	—	—	—	(340,000)	—	—	—
Mangalore Chemicals & Fertilizers Ltd., Mangalore	—	—	—	340,000	—	—	—
Mysore Chemicals & Fertilisers Ltd, Belagula	—	—	—	—	—	—	—

	Nitrophos-phate 20-20-0	Urea ammonium phosphate 28-28-0 & NPK Com. 17-17-17&14-28-14	NPK Com. 10-26-26 12-32-16& 14-36-12	Single super-phosphate (16% P ₂ O ₅)	Triple super phosphate 45% P ₂ O ₅	Total	
						N	P ₂ O ₅
SOUTH	—	360,000\$ 251,000** 96,500@	—	526,610	—	985,000	319,830
Andhra Pradesh	—	(251,000)** (96,500)@	—	(166,230)	—	(83,000)	(130,590)
Coromandel Fertilisers Ltd, Visakhapatnam	—	251,000** (96,500)@	—	—	—	83,000	104,000
Hyderabad Chemicals & Fertilisers Ltd, Maula Ali	—	—	—	41,900	—	—	6,700
Andhra Fertilisers Ltd, Tadepalli	—	—	—	40,000	—	—	6,400
Andhra Sugars Ltd, Tanuku	—	—	—	33,530	—	—	5,360
Krishna Industrial Corp'n., Nidadavole	—	—	—	50,800	—	—	8,130
Kerala	—	—	—	(44,700)	—	(234,000)	(43,350)
The Fertilisers & Chemicals Travancore Ltd, Alwaye	—	—	—	44,700	—	82,000	43,350
The Fertilisers & Chemicals Travancore Ltd, Cochin Unit, Ambelamedu	—	—	—	—	—	152,000	—
Karnataka	—	—	—	(74,170)	—	(160,000)	(11,860)
Mangalore Chemicals & Fertilizers Ltd, Mangalore	—	—	—	—	—	160,000	—
Mysore Chemicals & Fertilisers Ltd, Belagula	—	—	—	33,530	—	—	5,360

—Contd.

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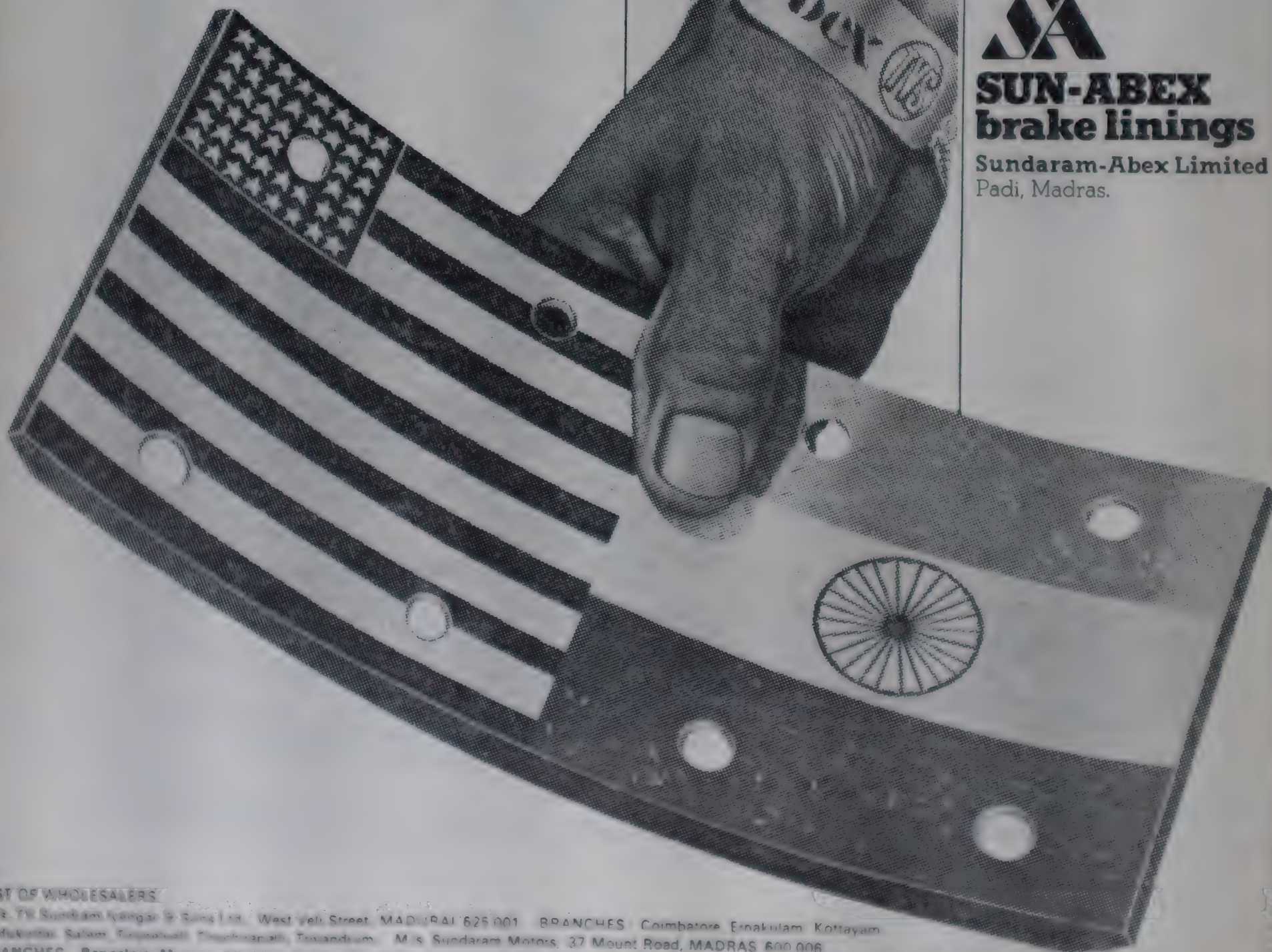
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Factorywise, Productwise Licensed Capacity of Fertilisers as on April 1, 1976—Contd.

	Ammonium sulphate (20.6% N)	Ammonium sulphate nitrate (26% N)	Calcium ammonium nitrate (25% N)	Urea (46% N)	Ammonium chloride (25% N)	Ammo-phosphate sulphate 16-20-0& 20-20-0†	Diammo-nium phosphate 18-46-0
Madhya Pradesh	—	—	—	(99,000)	—	—	—
Fertilizer Corpn of India Ltd, Trombay	—	—	—	99,000	—	—	—
at Fertilizer Ind. Ltd., Bombay	—	—	—	—	—	—	—
ramsai Morarji Chemical Co. Ltd,	—	—	—	—	—	—	—
bernath	—	—	—	—	—	—	—
ern Chemical Industries Ltd., Bombay	—	—	—	—	—	—	—
India Chemical Ltd., Loni-Kalbhori	—	—	—	—	—	—	—
Madhya Pradesh Agro-Industries Dev.	—	—	—	—	—	—	—
Corpn. Panvel	—	—	—	—	—	—	—
	—	—	—	(340,000)	—	—	—
Agro Chemicals Ltd., Goa	—	—	—	340,000	—	—	—
TRAL	32,600	—	—	1,064,920	40,000	—	—
Uttar Pradesh	(32,600)	—	—	—	—	—	—
ustan Steel Ltd. Bhilai Ltd	32,600	—	—	—	—	—	—
ramsai Morarji Chemical	—	—	—	—	—	—	—
. Ltd, Kumhari	—	—	—	—	—	—	—
Uttar Pradesh	—	—	—	(330,000)	—	—	—
ustan Zinc Ltd., Debari	—	—	—	—	—	—	—
am Chemical Industries, Kota	—	—	—	330,000	—	—	—
Uttar Pradesh	—	—	—	(734,920)	(40,000)	—	—
Fertilizer Corpn. of India Ltd, Gorakhpur	—	—	—	284,920	—	—	—

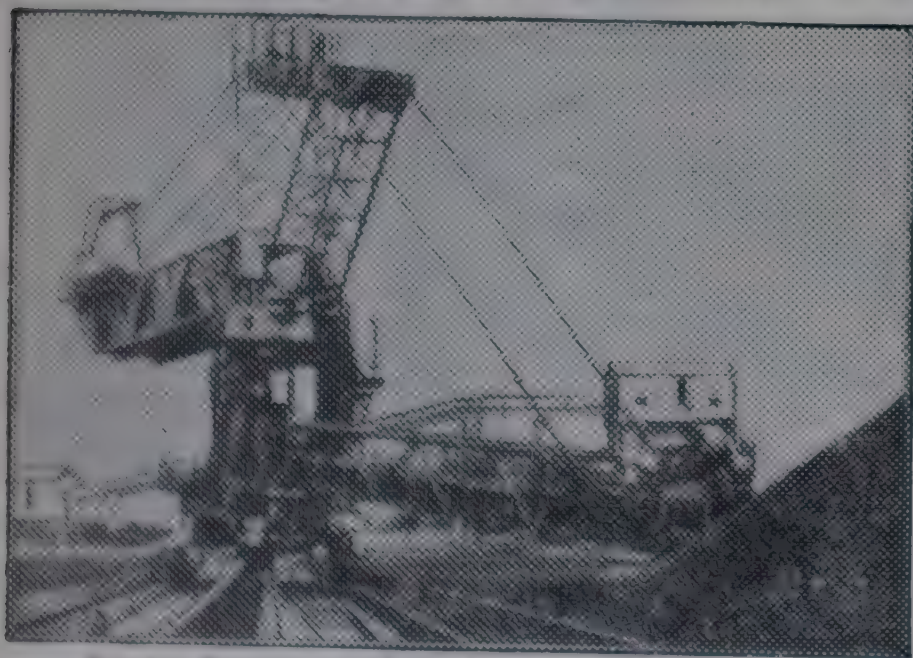
	Nitrophos-phate 20-20-0	Urea ammonium phosphate 28-28-0 & NPK Com. 17-17-17 & 14-28-14	NPK Com. 10-25-26 12-32-16 & 14-36-12	Single super- phosphate 16% P ₂ O ₅	Triple super phosphate 45% P ₂ O ₅	Total N	Total P ₂ O ₅
Madhya Pradesh	(180,000)	—	—	(250,700)	(27,000)	(81,000)	(88,270)
Fertilizer Corpn of India Ltd, Trombay	180,000	—	—	—	—	81,000	36,000
at Fertilizer Ind. Ltd, Bombay	—	—	—	22,500	—	—	3,600
ramsai Morarji Chemical Co. Ltd,	—	—	—	146,320	27,000	—	35,570
bernath	—	—	—	3,350	—	—	540
ern Chemical Industries Ltd, Bombay	—	—	—	33,530	—	—	5,360
India Chemical Ltd, Loni-Kalbhori	—	—	—	—	—	—	—
Madhya Pradesh Agro-Industries Dev.	—	—	—	45,000	—	—	7,200
Corpn, Panvel	—	(150,000)**	—	—	—	(170,000)	(42,000)
	—	150,000**	—	—	—	170,000	42,000
Agro Chemicals Ltd, Goa	—	—	—	362,960	—	429,720	58,070
TRAL	—	—	—	(95,000)	—	(6,720)	(15,200)
Uttar Pradesh	—	—	—	—	—	6,720	—
ustan Steel Ltd, Bhilai	—	—	—	—	—	—	—
ramsai Morarji Chemical	—	—	—	95,000	—	—	15,200
. Ltd, Kumhari	—	—	—	(75,000)	—	(152,000)	(12,000)
Uttar Pradesh	—	—	—	75,000	—	—	12,000
ustan Zinc Ltd., Debari	—	—	—	—	—	152,000	—
am Chemical Industries, Kota	—	—	—	—	—	(341,000)	(9,750)
Uttar Pradesh	—	—	—	(60,960)	—	131,000	—
Fertilizer Corpn. of India Ltd., Gorakhpur	—	—	—	—	—	—	—

—Contd.

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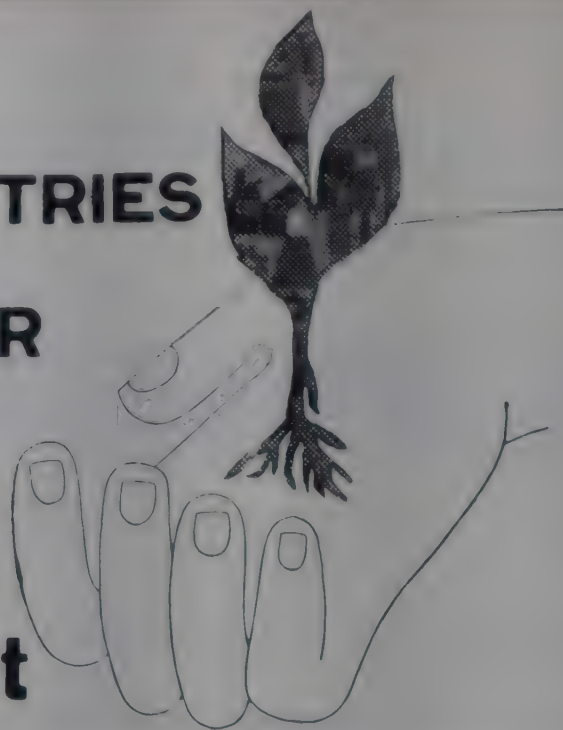
Factorywise, Productwise Licensed Capacity of Fertilisers as on April 1, 1976—Contd.

	Ammonium sulphate (20.6% N)	Ammonium sulphate nitrate (26% N)	Calcium ammonium nitrate (25% N)	Urea (46% N)	Ammonium chloride (25% N)	Ammo- phosphate sulphate 16-20-0 & 20-20-0†	Diammo- nium phosphate 18-46-0
Central Jute Mills Co. Ltd, Varanasi	—	—	—	—	40,000	—	—
Chemicals Ltd., Magarwara	—	—	—	—	—	—	—
Explosives Ltd., Kanpur	—	—	—	450,000	—	—	—
	—	—	—	—	—	—	—
M. Chemical Works, Delhi	—	—	—	—	—	—	—
TH	—	—	320,000	—	—	—	—
	—	—	(320,000)	—	—	—	—
Fertilizer Corpn. of India Ltd, Bhilai	—	—	320,000	—	—	—	—
	528,700	50,000	480,000	403,000	—	—	—
	(100,000)	—	—	(55,000)	—	—	—
Fertilizer Corpn. of India Ltd, Bhilai	100,000	—	—	55,000	—	—	—
Chemical Unit of Associated Ind. (Bhilai) Ltd, Chandrapur	—	—	—	—	—	—	—
	(356,300)	(50,000)	—	(18,000)	—	—	—
Fertilizer Corpn. of India Ltd, Bhilai	320,000	50,000	—	18,000	—	—	—
Iron & Steel Co. Ltd, Bhilai	23,100	—	—	—	—	—	—

	Nitrophos- phate 20-20-0	Urea ammonium phosphate 28-28-0 & NPK Com. 17-17-17&14-28-14	NPK Com. 10-26-26 12-32-16 & 14-36-12	Single super- phosphate 16% P ₂ O ₅	Triple super phosphate 45% P ₂ O ₅	Total N	P ₂ O ₅
Central Jute Mills Co. Ltd, Varanasi	—	—	—	—	10,000	—	—
Chemicals Ltd, Magarwara	—	—	—	60,960	—	—	9,750
Explosives Ltd, Kanpur	—	—	—	—	200,000	—	—
	—	—	(132,000)	—	—	—	(21,120)
M. Chemical Works, Delhi	—	—	132,000	—	—	—	21,120
TH	—	—	—	—	80,000	—	—
	—	—	—	—	(80,000)	—	—
Fertilizer Corpn. of India Ltd, Bhilai	—	—	—	—	80,000	—	—
	—	—	175,360	—	429,360	—	35,660
	—	—	45,000£	—	—	—	—
	—	—	(33,530)	—	(45,000)	—	(5,360)
Fertilizer Corpn. of India Ltd, Bhilai	—	—	—	—	45,000	—	—
Chemical Unit of Associated Ind. (Bhilai) Ltd, Chandrapur	—	—	33,530	—	—	—	5,360
	—	—	(23,470)	—	(97,480)	—	(3,760)
Fertilizer Corpn. of India Ltd, Bhilai	—	—	—	—	90,000	—	—
Iron & Steel Co. Ltd, Bhilai	—	—	—	—	4,760	—	—

—Contd.

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Factorywise, Productwise Licensed Capacity of Fertilisers as on April 1, 1976—Contd.

	Ammonium sulphate (26.6% N)	Ammonium sulphate nitrate (26% N)	Calcium ammonium nitrate (25% N)	Urea (46% N)	Ammonium chloride (25% N)	Ammo sulphate sulphate 16-20-0 & 20-20-0†	Diammo- nium phosphate 18-46-0
Orissa State Superphosphate Factory, Sindri	—	—	—	—	—	—	—
Bokaro Steel Ltd, Bokaro	13,200	—	—	—	—	—	—
Orissa	(28,200)	—	480,000	—	—	—	—
Industan Steel Ltd, Rourkela	28,200	—	480,000	—	—	—	—
Orissa Ferts. & Chems Ltd, Rourkela	—	—	—	—	—	—	—
West Bengal	(44,200)	—	—	(330,000)	—	—	—
Industan Steel Ltd, Durgapur	21,200	—	—	—	—	—	—
Indian Iron & Steel Co. Ltd, Burnpur-Kulti	23,000	—	—	—	—	—	—
Yashree Chemical & Fertiliser Ltd, Khardah	—	—	—	—	—	—	—
Phosphates Co. Ltd, Rishra	—	—	—	—	—	—	—
State Fertilizer Corpn. of India Ltd, Durgapur	—	—	—	330,000	—	—	—
All-India	945,910	50,000	800,000	4,208,920	64,750	171,500† 51,480	108,000
	Nitrophosphate 20-20-0	Urea ammonium phosphate 28-28-0 & NPK Com. 17-17-16&14-28-14	NPK Com. 10-26-26 12-32-16 & 14-36-12	Single super-phosphate 16% P ₂ O ₅	Triple super phosphate 45% P ₂ O ₅	Total N P ₂ O ₅	
Orissa State Superphosphate Factory, Sindri	—	—	—	23,470	—	—	3,760
Bokaro Steel Ltd., Bokaro	—	—	—	—	—	2,720	—
Orissa	—	—	—	(45,000)£	—	(125,770)	(7,600)
Industan Steel Ltd, Rourkela	—	—	—	—	—	125,700	—
Orissa Ferts. & Chems. Ltd, Rourkela	—	—	—	45,000£	—	—	7,600
West Bengal	—	—	—	(118,360)	—	(161,110)	(18,940)
Industan Steel Ltd, Durgapur	—	—	—	—	—	4,370	—
Indian Iron & Steel Co. Ltd, Burnpur-Kulti	—	—	—	—	—	4,740	—
Yashree Chemical & Fertilisers Ltd, Khardah	—	—	—	57,360	—	—	9,180
Phosphates Co. Ltd, Rishra	—	—	—	61,000	—	—	9,760
State Fertilizer Corpn. of India Ltd, Durgapur	—	—	—	—	—	152,000	—
All-India	180,000	401,000** 96,500@ 360,000\$	375,500	1,415,160 (45,000)£	27,000	2,676,080	736,750

This material is not used for agricultural purposes.
Urea ammonium phosphate.

Of grade 20-20-0. ††Of grade 15-15-15.

NPK complex fertiliser of grades (14-28-14) and (17-17-17)

+Production of NP and NPK Complexes expected in December 1976; therefore, excluded from the totals state and all-India. £Pelofos of grade 18%P₂O₅.

@ NPK complex fertiliser of grade (14-35-14).

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Machines and more machines

S. P. Chopra

the foundations for the rapid growth of the basic industries were laid during the second five-year Plan period (1956-57—1960-61). It was during the third Plan period (1961-62—1965-66) that this country was able to take up the setting up of capital and producer goods industries in a big way. It was realised that the establishment of these industries would accelerate the whole process of industrial growth in this country. Besides the encouragement of units manufacturing machinery for sugar, textiles, tea, cement, paper, and mining, the government provided incentives for the coming into being of air-conditioning and refrigeration plants, and units for the manufacture of machine tools, lifts, cranes, conveyors, air and gas compressors, and roller bearings, tractors, rollers, ships, railway wagons, railway locomotives and commercial vehicles.

racing ahead

Since 1960, the indices for the production of basic industries and capital goods industries have moved ahead at comparable rates leaving far behind the intermediate and consumer goods industries. In 1976, it has been estimated, that the production in this industry improved by 13.2 per cent as against the rise of 16.6 per cent in the case of basic industries. Over the long range, from 1960 to 1976, the ground covered by both these groups of industries, in percentage terms, was almost the same. By far the most important segment of this group of industries is represented by railway wagons, railway locomotives and commercial vehicles. In 1961, the number of commercial vehicles produced in this country was 100. The target for 1965-66 was set at 60,000 vehicles but it has so far remained elusive; their output in

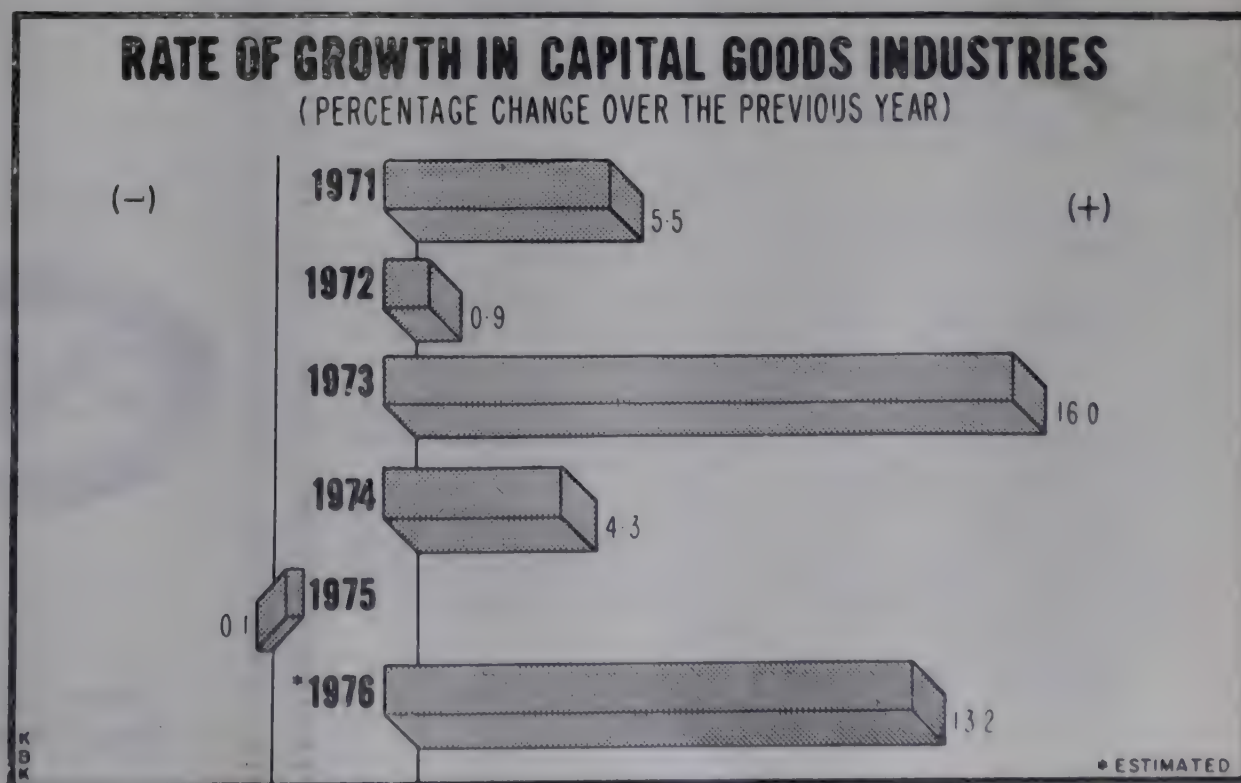
1975-76 was no more than 43,800. Ambitious targets have been fixed for railway wagons and railway locomotives as well from time to time but their production schedules have not moved according to expectations. However, in 1975-76, all these three sub-groups had recorded rates of growth ranging between 9 and 12 per cent.

The textile machinery has had a good record of advancement. The value of textile machinery produced in this country in 1965-66 was around Rs 21.6 crores. In 1975-76, it was as high as Rs 129.37 crores. Similarly impressive progress was witnessed in the case of sugar, tea, cement and paper machinery.

The engineering industry has exhibited its capabilities by exploring and winning over a number of foreign markets. Currently, annual exports average around Rs 400 crores with the target of raising it to Rs 1000 crores by 1980-81. Besides exporting its products to the developed countries, this industry has penetrated some of the newly developing markets. Special efforts

are being made to win over the south-east Asian market. In January 1977, the Engineering Export Promotion Council will hold an exhibition in Singapore where more than 100 firms will participate. Top importance at this exhibition is being given to textile machinery and accessories followed by the automobile industry. The other industries which will display their goods are sugar mill machinery, electric motors, transformers, switch gears, electronics and domestic appliances.

That rising production of iron and steel and non-ferrous metals in this country needs to be utilised for the fabrication of machinery both for domestic use and exports, has been emphasised by the government in recent pronouncements. And there are units in this country which have ample unutilised capacity for the production of engineering products. It seems that the protection received by some of them in the past has inhibited their mental outlook and that they have failed to understand the size of the world market which has been beckoning



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to exploit it. The chairman of Engineering Export Promotion Council (EEPC), Mr R.C. Maheshwari, recently gave a graphic picture of the existence of such units which, in his view, had developed "marketing attitudes bred in the comparatively placid waters of domestic protection". Perhaps some of the engineering units were hesitating to enter the world of exports because of complete lack of experience in this regard. May consortia of such units could be formed so that the risk involved could

be reduced and in due course the members of these groups could gather enough expertise to venture out on their own.

The two cardinal principles for success in the markets abroad are: high quality of products and competitive prices. Some of the engineering units are in need of modernisation so as to be able to manufacture products which can compete in foreign markets. To encourage such units, it is necessary that soft loans should be made available to these units by the finan-

cial institutions. According to an estimate made by the EEPC, such loans valued at Rs 100 crores will suffice to import fighting spirit in the old and worn-out units. This is indeed a modest requirement as the results flowing from such assistance can be highly beneficial in terms of foreign exchange earned. In the first instance, this help could be restricted to such concerns as have proved record of performance in the past. Slowly, it could be extended to others without any limitations.

Production in Capital Goods Industries

Industry	Weight (1970=100)	Unit	Production during					Percentage change		
			1971-72	1972-73	1973-74	1974-75	1975-76 (Prov.)	1973-74	1974-75	1975-76
								1972-73	1973-74	1974-75
Engines	0.5422	Rs. lakhs	4378	6053	8266	11159	13977	+36.6	+35.0	+25.3
Diesel engines (veh.)	0.0452	Nos.	2108	2223	2648	2864	4185	+19.1	+8.2	+46.1
Diesel engines (stat)	0.6857	Th. Nos.	70.0	88.2	136.3	110.5	134.3	+54.5	-18.9	+21.5
Water driven pumps	0.2295	"	238.0	273.4	339.8	281.5	276.7	+24.3	-17.2	-1.7
Textile machinery (incl. accessories)	0.7196	Rs. lakhs	6642	7094	9266	12704	12937	+30.6	+37.1	+1.8
Gar machinery	0.1875	"	1792	1822	2232	2704	3230	+22.5	+21.1	+19.5
Lathe machinery	0.0304	"	99	152	184	233	305	+21.1	+26.6	+30.9
Grinding machinery	0.0493	"	701	685	753	515	1094	+9.9	-31.6	+112.4
Grinding machinery	0.2066	"	224	407	812	902	633	+99.5	+11.1	-29.8
Chemical & pharmaceutical machinery	0.1051	"	2191	2659	3438	4144	5038	+29.3	+20.5	+21.6
Power machinery	0.0792	"	606	524	517	1325	1781	-1.3	+156.3	+34.4
Other machinery	0.0254	"	335	374	393	609	554	+5.1	+55.0	-9.0
Lifting machinery	0.0450	"	326	310	390	456	671	+25.8	+16.9	+47.1
Air-conditioning and refrigeration plants	0.1258	"	1115	1054	1324	1390	1065	+25.6	+5.0	-23.4
Machine tools	0.5367	Rs. lakhs	5125	5285	6727	9038	11272	+27.3	+34.4	+24.7
Tools	0.0723	Nos.	546	513	600	670	911	+17.0	+11.7	+36.0
Conveyors	0.1235	Th. tonnes	10.3	10.0	10.7	14.6	17.8	+7.0	+36.4	+21.9
Conveyors	0.0809	Rs. lakhs	1137	1326	1907	2947	3590	+43.8	+54.5	+21.8
Gas and gas compressors	0.2469	Nos.	5013	5221	6001	6627	6006	+14.9	+10.4	-9.4
Gears and roller bearings	0.4756	Lakh Nos.	230.1	217.2	244.7	233.2	242.2	+12.7	-4.7	+3.9
Agricultural tractors	0.3308	Th. Nos.	16.8	19.8	24.2	31.1	33.2	+22.2	+28.5	+6.8
Rollers	0.0905	Nos.	418	887	1566	1349	561	+76.6	-13.9	-58.4
Ship building and repairs	0.5200	Rs. lakhs	1086	1351	3953	5183	4913	+192.6	+31.1	-5.2
Railway wagons	1.1282	Th. Nos.	8.5	10.8	12.2	11.0	12.2	+13.0	-9.8	+10.9
Railway locomotives	0.9900	Nos.	208	196	195	172	192	-0.5	-11.8	+11.6
Commercial vehicles	1.2499	Th. Nos.	39.7	38.4	42.7	40.2	43.8	+11.2	-5.9	+9.0

Engineering industry has high aims

F.A.A. Jasdanwalla

THE ENGINEERING industry has witnessed considerable change in its operations during the last two years. From a period of prosperity and near-boom, the industry's fortunes, on the domestic front, have declined sharply. Recession in demand has been widely felt and, especially so, in 1975. On the other hand, earlier constraints of shortages of raw materials and power problems have been largely overcome. Power, however, continues to be a constraint in certain states such as Maharashtra and Karnataka.

With this change in its position, the engineering industry has also become increasingly conscious of the need for aggressive export thrust, in-house R & D, cost controls and better resources management. The industry has been taking numerous steps, in cooperation with the government, for improved materials and energy conservation, maintenance and productivity. These efforts have coincided with an overall improvement in the industrial relations climate of the country.

all-round improvement

Statistics of production reveal an all-round upswing in 1976 over 1975 except in such industries as lifts, jeeps, electric motors, transformers, railway wagons, diesel engines etc. which show a sharp decline in production in the current year. Table I gives the engineering production position.

It is necessary to note that

Mr F.A.A. Jasdanwalla is president of the Association of Indian Engineering Industry (AIEI)

improved production has not meant an all-round improvement in capacity utilisation since the 1975 production base was extremely low due to domestic recession. Accordingly, the industry continues to operate under conditions of unutilised capacity.

A principal problem of the industry is connected with demand and much of this is linked with government purchases. State electricity boards, DGS & D, railways, defence, etc. are the principal buyers of engineering stores and it has been reported that the flow of orders has been slow and payments even slower, due to limitations of resources. There has been only marginal improvement in recent weeks, as yet too slight to bring about a rapid upswing in production or turnover.

export drive

It is in this context that the industry has undertaken a major export drive aiming to achieve an export target of Rs 1000 crores by 1979, or in the last year of the fifth five-year Plan.

The fifth five-year Plan document has stated that by the end of the Plan period engineering exports would emerge as the single most important group of items of export. In fact, in 1974-75 engineering exports displaced the traditional export earners, viz. sugar, jute and tea to head the list of major export items of the country. Out of the total exports of Rs 3329 crores that year, the share of engineering exports was Rs 349 crores; sugar Rs 339

crores; jute manufactures Rs 297 crores and tea Rs 228 crores. In 1975-76 engineering exports rose sharply to Rs 409 crores. The fifth Plan document has estimated that total export of engineering goods during the Plan period would be of the order of Rs 2328 crores out of a total Indian export of Rs 21,722 crores. In the first two years of the fifth Plan period, as given in Table II, engineering exports totalled Rs 705 crores and there is every likelihood that Rs 550 crores would be touched in 1976-77.

meeting the target

This would mean that by exporting merely Rs 1013 crores (averaging slightly over Rs 500 crores per annum) in the remaining two years of the Plan, the target would be met. Industry is confident of meeting the target in the fifth Plan documents; it is modest in relation to capabilities, potential plans and efforts. As against Rs 1013 crores left for the last two years of the Plan, the engineering industry should achieve about Rs 1500 crores, thus exceeding the fifth Plan target of Rs 2328 crores. In the first six months of the current year, exports of engineering goods rose by 31 per cent to Rs 233.7 crores.

The order book position is even more encouraging; against Rs 423 crores worth of export orders secured during the whole of last year, engineering industry holds orders of the value of Rs 710 crores in the first five months of the current year. The engineering industry has undertaken two major thrusts for improved capacity

utilisation and efficiency. First, the industry has embarked upon an aggressive export drive, aiming at Rs 1000 crores export target by 1978-79. Secondly, the industry has undertaken a major drive for conservation of materials and energy, cost reduction and improved productivity.

optimistic prospects

The prospects of this industry in the long-term are, without doubt, full of optimism. As the national economy develops in all sectors, the requirements of plant and machinery would steadily increase, thereby stimulating the growth of the engineering sector. In the short and medium term the industry's prospects would depend largely on government policies which are also aimed at increased liberalisation and growth-orientation.

Official policy for industrial licensing has seen numerous adjustments providing for enhanced production, better capacity utilisation, free diversification, etc. The clearances required for an industrial licence are available more speedily and, by and large, the licensing policy and procedure does not stand in the way of industry's growth and development.

A major constraint in the growth effort has now become the availability of financial resources in support of investment in expansion, diversification and modernisation, as also new investment. It is in recognition of this problem that the facility of investment allowance

TABLE I
Production Targets and Achievements
(Advance Information upto October, 1976)

Industry	Weight	Accounting Unit	Annual Plan Targets	Production			Production		
				January— October 1976	January— October 1975	% Growth rate	April— October 1976	April— October 1975	% Growth rate
Aluminium	0.54	Th. Tonnes	220	177.4	133.0	+33	124.8	99.4	+26
Copper	0.01	Th. Tonnes	36.0	19.9	13.1	+	10.8	8.2	+
Lead	—	Th. Tonnes	8.0	4.1	3.8	+8	2.7	2.8	—4
Zinc	—	Th. Tonnes	48.0	22.0	20.4	+8	14.5	15.0	—3
Boilers	0.54	Rs. Crores	150.0	117.5	110.42	+6	73.7	71.9	+3
Sugar Mill Machinery	0.19	Rs. Crores	36	31.5	26.6	+18	23.9	19.0	+26
Cement Mill Machinery	0.21	Rs. Crores	10	7.1	5.3	+34	5.0	3.1	+61
Machine Tools	0.54	Rs. Crores	120	97.7	84.7	+15	60.0	57.1	+5
Agricultural Tractors	0.32	Th. Nos.	35.5	31.4	26.2	+20	21.1	16.7	+26
Transformers	1.48	Mill. KVA	15.5	11.2	11.1	—1	6.8	6.9	—1
Electric Motors	0.35	Mill. HP	3.7	2.81	3.05	—8	1.58	1.83	—14
Electric Lamps									
Incandescent Filament	0.29	Mill. Nos.	155	126.68	110.18	+15	90.31	74.62	+21
Fluorescent Tubes	0.09	Mill. Nos.	18	13.48	13.74	—2	9.16	9.87	—7
Dry Cells	0.32	Mill. Nos.	600	417.01	439.8	+8	349.14	284.4	+23
Storage Batteries	0.22	Mill. Nos.	1.5	1.20	1.09	+10	0.81	0.78	+4
Electric Fans	0.24	Mill. Nos.	2.4	1.93	1.71	+13	1.36	1.19	+14
Domestic Refrigerators	0.13	Th. Nos.	—	86.0	99.1	—13	71.1	68.5	+4
Airconditioners	0.01	Th. Nos.	—	12.5	7.4	+69	9.6	3.7	+159
Radio Receivers	0.97	Th. Nos.	1600	1361	1215	+12	960	837	+15
House Service Meters	0.21	Th. Nos.	—	1445	1375	+5	1001	972	+3
Railway Wagons	1.13	Th. Nos.	11.5	9.46	9.98	—5	6.30	6.77	—7
Automobiles									
Commercial Vehicles	1.25	Th. Nos.	50.0	38.6	35.4	+9	26.4	24.3	+9
Passenger Cars	0.49	Th. Nos.	25.0	24.7	19.6	+26	19.2	12.5	+54
Jeeps	0.14	Th. Nos.	8.0	5.8	8.0	—27	4.4	5.6	—21
Scooters	0.11	Th. Nos.	183	22.5	81.4	+50	89.6	58.9	+52
Mopeds/Scooterettes	—	Th. Nos.	—	30.6	29.1	+5	20.9	19.2	+9
Motorcycles	0.11	Th. Nos.	76.0	59.8	57.2	+5	42.0	39.8	+6
Three Wheelers	0.03	Th. Nos.	17.0	14.8	9.8	+51	11.0	7.2	+53
Non Plan Items									
Bicycles	0.37	Th. Nos.	2475	2141	1740	+23	1465	1220	+20
Diesel Engines (Static)	0.69	Th. Nos.	140	84.7	118.6	—29	51.2	81.5	—37
Power Driven Pumps	0.23	Th. Nos.	314	217.2	234.0	—7	148.8	153.1	—3
Air/Gas Compressors	0.25	Th. Nos.	—	5.6	5.0	+12	3.7	3.4	+9
Structurals	9.47	Th. Tonnes	142	92.4	87.3	+6	65.5	61.0	+7
Transmission Towers	0.12	Th. Tonnes	—	89.7	17.8	+27	62.8	51.6	+22
Welding Electrodes	0.62	M.R.M.	440	412.6	308.6	+34	293.1	217.5	+35

—Contd.

* 1976 Production figures relate to blister while 1975 data are in terms of FRTP.

TABLE I
Production Targets and Achievements—Continued

Industry	Weight	Accounting Unit	Annual Plan Targets	Production			Production		
				January—October 1976	January—October 1975	% Growth rate	April—October 1976	April—October 1975	% Growth rate
Steel Pipes and Tubes									
Black and Galvansied Seamless	0.72	Th. Tonnes	—	342	320	+7	255	215	+19
Cranes	0.07	Th. Tonnes	—	27.0	24.9	+8	17.8	17.4	+2
Lifts	0.12	Th. Tonnes	16.9	15.7	15.1	+4	10.8	10.6	+2
Wire Ropes	0.07	Nos.	—	633	648	—2	399	462	—14
Steel Castings	0.47	Th. Tonnes	—	23.0	23.4	—2	15.6	16.4	—5
C.I. Spun Pipes	0.61	Th. Tonnes	—	51.6	51.8		35.1	35.3	—1
Steel Forgings	0.11	Th. Tonnes	—	225.7	234.9	—4	156.4	165.2	—5
		Th. Tonnes	100.0	77.2	73.9	+4	52.3	50.8	+3
Small and Cutting Tools									
Forged Hand Tools	0.16	Rs. Crores	—	16.45	14.60	+13	11.50	10.79	+7
Grinding Wheels	0.21	Rs. Crores	—	801	6.85	+17	5.68	4.88	+16
Twist Drills	0.15	Mill. Nos.	—	11.5	10.8	+6	8.0	7.2	+11
Sewing Machines	0.05	Th. Nos.	300	294.3	227.3	+29	209.4	147.1	+42
Typewriters	0.14	Th. Nos.	55	47.0	41.3	+13	32.7	29.0	+13
Razor Blades	0.13	Mill. Nos.	1235	751.6	858.8	—12	540.3	608.6	—11
Ball & Roller Bearings	0.48	Mill. Nos.	27	22.4	18.5	+21	15.8	12.8	+23
M.S. Bolts & Nuts	0.43	Th. Tonnes	30	21.7	24.0	—10	14.9	16.2	—8
Motor Starters	0.40	Th. Nos.	—	406	334	+22	270	211	+28
Wires & Cables									
Winding Wires	0.24	Th. Tonnes	16	16.5	15.6	+6	11.9	11.1	+7
PVC/VIR	0.18	MCM	450	422	308	+37	322	214	+50
Wire Rods for ACSR	0.23	Th. Tonnes	—	48.9	31.1	+57	35.5	22.1	+61
P.I.L.C	0.15	K.M.	—	2498	2274	+10	1884	1652	+14
ACSR/AAC	0.18	Th. Tonnes	70	72.7	34.0	+114	49.7	24.8	+100
Rubber & Plastic Accessories	0.07	Mill. Nos.	—	8.38	7.65	+10	6.60	5.37	+23
Aluminium Sheets & Circles	0.38	Th. Tonnes	—	29.5	30.5	—3	22.7	21.3	+7
Aluminium Foils	0.19	Th. Tonnes	—	5.8	3.8	+53	4.0	2.7	+48
Brass/Copper Sheets & Circles	0.32	Th. Tonnes	—	11.5	8.0	+44	8.4	6.2	+35
Aluminium Extruded Products	0.19	Th. Tonnes	—	9.2	9.3	—1	7.4	6.5	+14
Paper & Pulp Machinery	0.08	Rs. Crores	20.0	12.3	17.0	—28	9.0	12.2	—26
Mining Machinery	0.05	Rs. Crores	12.0	12.3	6.0	+105	7.3	4.3	+70
Metallurgical Machinery	0.02	Rs. Crores	9.35	11.0	7.0	+57	6.5	5.1	+27
Steel Plant Equipment		Rs. Crores	33.0	37.5	22.7	+65	23.9	16.2	+48
Chem. & Pharm. Machinery	0.11	Rs. Crores	52.0	52.1	35.8	+46	35.1	24.9	+41
Printing Machinery	—	Rs. Crores	4.0	2.6	2.8	—7	1.7	2.0	—15
Rubber Machinery	—	Rs. Crores	9.0	7.2	5.5	+31	4.3	4.1	+5
Road Rollers	0.09	Nos.	760	221	725	—70	88	394	—78
Earth Moving Equipmts. (Dumpers, Scrapers, Loaders, Crawler Motor Graders & Shovels/ Excavators)	0.06	Nos.	947	895	831	+8	494	370	+34

been introduced for select- industries. However, the n-availability of resources is a real problem causing wide anxiety since, the borrowing rms and interest rates continue to be high. Industry seeks extension of the facility of investment allowance and a smooth flow of credit, at lower rates of interest, to finance growth. Industry, therefore, has also proposed reliefs in direct taxation which would generate surpluses to finance development from with-

The engineering sector has so welcomed the setting up of the Jha Committee on indirect taxes since the cascading effect of excise and other duties adds to the cost and price structure of industrial products. Rationalisation of taxes, reduction of import duties generally and simplification of the entire system would also ensure availability of resources for growth. It is necessary to emphasise that, in view of limited

resources, the pace of the engineering industry's progress would be determined principally through fiscal policy adjustments.

The government also utilises another policy instrument for the generation of industrial activity, including the regulation of foreign exchange expenditure, namely, import policy. In

TABLE III
Export of Engineering Goods
(Value in crores Rs.)

Period	Export performance
1971-72	125.27
1972-73	141.08
1973-74	193.47
1974-75	349.11
1975-76	408.22
April-September 1976	237.78
Export orders in hand as on 31.10.1976	737.47

Source:EEPC

recent months there has been steady liberalisation in policy combined with simpler procedures. In view of the comfortable foreign exchange reserves position industry has suggested that many items should be placed on Open General Licence (OGL) and duties on raw materials and components should be reduced. These two measures would support industry's efforts to reduce costs and push up production and export.

By and large the import policy has become simpler but a radical shift to OGL would reduce the procedural problems to a minimum.

An aspect of import liberalisation has been the freer import of technical documentation drawings, etc. allowed by the government. Combined with this, the introduction of in-house R & D registration for special facilities has given impetus to engineering research and development activity. The emphasis currently is on developmet

activity by the industry, supported by research at national laboratory level.

The pace of international technology development is, however, far ahead of Indian growth in this area. Accordingly, as with other countries, India needs to purchase technology for modernisation and development.

Over the years the government has framed a progressively stricter policy for technology import in the interests of self-reliance and self-development. The engineering industry supports this policy orientation. However, to keep pace with developments abroad the engineering sector needs to have access to advanced technology and, for this purpose, a review of the official technology buying policy would be required. At present the terms are not attractive to the overseas seller of know-how and a more balanced policy would be necessary to increase the flow

TABLE II
Value Added and the Gross Value of Output for the Engineering Goods Industry : 1970-71—1974-75
(Rs millions)

	First estimate			Second estimate		
	Value added	Gross value		Value added	Gross value	Exports
1970-71	10125	40300	Current Prices	7168	26629	1165
1971-72	11332	45718		8800	30470	1214
1972-73	13104	52535 a		9755	35602 a	1425
1973-74	15359	61575 a		10933	39901 a	2017
1974-75 b	19610	78618		14049	51273	3528
1970 71 Prices						
1970-71	10125	40300		7168	26629	1165
1971-72	10713	43221		7947	28488	1143
1972-73	11624	46581 a		8678	31673 a	1234
1973-74	12098	48481 a		8953	32677 a	1596
1974-75 b	12025	48188		8730	31863	1896

a Projected on the basis of the average of the 1970-71 and 1971-72 ratios of gross value to value added. This ratio was nearly the same for the two years. The average ratios were 24.9% for the first estimate and 27.4% for the second estimate.

b Estimated by applying the industrial production indices (and wholesale price indices) suitably weighted between sub-sectors, to the 1973-74 figures in the constant 1970-71 prices (in the current price series). The average ratio for the first estimates was 0.994 (1.277), and for the second, 0.975 (1.285).

Source : National Accounting Statistics pp. 99, et seq. CSO, February 1976

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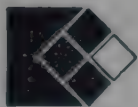
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technology, on a selective

s. is necessary to emphasise technology purchase would needed to speed up work widen and deepen the production base, as well as port and import substitution. Export has become a principle commitment for the engineering industry and world opportunities in regard to port, construction and project ports are immense.

Policy changes have been come and the AIEI has recently highlighted the current problems such as shipping, port finance, high freight costs, port congestion, inadequate government support for port marketing, power shortage in certain states and the need for increased cash compensatory support for certain industries. These points were highlighted in AIEI's recent port workshop and a further dialogue with the government

is being initiated.

The principal policy developments should be related to :

- (a) a specific policy for project and consortia exports,
- (b) further liberalisation in export finance, and
- (c) extension of buyers' credits to selected countries which purchase Indian engineering goods.

Finally, a reference is necessary to the role of banks and financial institutions in the growth of production and exports by the engineering industry.

It will be clear that the major factor to sustain industry's growth effort is finance for investment, modernisation, export, etc. The principal source of finance today is not industry itself but banks and financial institutions which come within the government sector. A comprehensive review of their organisation, working and orientation is

TABLE IV

Provisional Export of Engineering Goods During 1976-77

(As per D.C.I. & S.) (Value in crores Rs.)

Months	1975-76	1976-77	% variation over 1975-76
April	31.00	35.15	+13
May	28.75	42.10	+46
June	30.42	32.00	+ 5
July	32.65	43.60	+33
August	31.60	40.73	+29
September	26.33	44.20	+67
Total	180.75	237.78	+31

Source: EEPC

therefore needed to ensure that they keep pace with the needs of national growth. This is a very wide subject which requires the fullest consideration of the government and industry.

By and large, government policy changes have been extremely helpful and further adjustments would generate increased industrial activity. Raw materials, specially steel, constitute only a marginal supply problem though pricing

of steel requires review and study. The non-ferrous metals group, however, continues to pose problems for industry and a higher priority should be placed on indigenous production in non-ferrous metals.

The burden of responsibility lies largely with the engineering industry to improve production and resources management and, given a steady base of developmental expenditure by the government, a stable growth process is assured.

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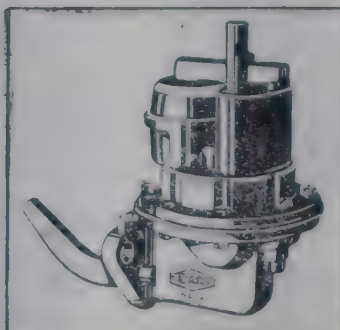
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Towards self-reliance in machine-building

R. C. Ummat

CONSCIOUS efforts made during the era of planned development, which started in 1947, at building up basic and heavy industries, undoubtedly, have resulted in a great diversification of our industrial structure. Although the contemplated goal of having a self-sustaining economy by the middle of the current decade has proved elusive, the build-up of the machinery and equipment manufacturing capacity that has taken place, especially since the turn of the last decade, evokes optimism at the attainment of the above goal is now not very distant.

The encouraging trend in the reports of engineering projects, the spate of discussions that have been held in the last few months not only with the West European countries but also with industrial entrepreneurs from the advanced countries of the west about the possibilities of setting up joint key projects in the developing countries, particularly in West Asia, and the beginnings recently made in the import of various types of equipment and machinery and in some medium type turn-key projects are further indications of the strides that we have taken in producing quality machines.

Sophisticated production

On the domestic front, not only do we do not now need to import equipment for most of the consumer goods industries, including textiles, sugar, tea, and other goods, etc., but also are able to produce on our own equipment ranging between 60

and 75 per cent of the requirements of even such sophisticated industries as fertilizers, petroleum, electronics and chemicals. The requirements of power generation equipment are being met wholly from within the country. The successful working of the first stage of the Bokaro steelworks and the confidence with which the expansion programme of the Bhilai plant to four million tonnes ingots capacity is being implemented depending more or less wholly on all supplies from indigenous sources, suggest that we have practically reached self-reliance in steel-making.

Manufacturing capacity

An idea of the capabilities which we have attained in the manufacture of machinery and equipment, specially since the turn of the last decade, can be had from table on page 1375. It shows that by 1978-79, the terminal year of the current Plan period, substantial capacities would have been built up for the production of machine tools, the equipment required for setting up metallurgical, mining, cement, chemicals and pharmaceuticals, jute, textiles, sugar, rubber, paper and pulp and a host of other industries, and machinery for agriculture, electricity generation, transportation and construction. An overwhelming proportion of the capacity likely to be attained by the above year, in fact, has already been established as would be evident from the production figures for 1975-76.

Both the public and the private sectors have contribut-

ed their mite to the growth of the machine-building industry in the country, although in the early years of its development, the thrust primarily came from the public sector.

Slender base

When we became independent in 1947, we had a very slender industrial base. The only well-established industries at that time were jute manufacture—in which the undivided India practically had monopoly in the world—cotton textiles, sugar, vanaspati and cement, apart, of course, from steel. There were also some forest-based industrial units, but only a smattering of engineering industries turning out such simple items as water buckets, Persian wheels, the traditional farming implements, hand tools, electric fans, sewing machines, bicycles, radio receivers, electric lamps and a few other consumer products.

In the basic industries sector, besides steelworks at Jamshedpur, Burnpur and a small one at Bhadravati, the units of any significance were half-a-million tonnes oil refinery at Digboi, an approximately 2,500 tonnes capacity aluminium manufacturing unit at Asansol, a copper smelting plant of 8,000 tonnes capacity at Ghatsila, a recently built-up automobile industry in West Bengal and Bombay—more of an assembling nature than a manufacturing business—a couple of small fertilizer plants in south India and a few thousand numbers

capacity wagon-building industry in West Bengal.

There was hardly any machinery and equipment manufacturing unit worth the name at that time. Most of the requirements of machinery and equipment, even for the well-established industries, at that time were met through imports. The maintenance needs too could not be tackled except through imports of spare parts from the foreign suppliers of equipment and machinery.

Concerted efforts

Soon after independence, when concerted efforts came to be made at the industrialisation of the country, it was realised—and rightly—that industrialisation on any ambitious scale could not be undertaken without going in a big way for the production of mother machines and equipment within the country itself. The private sector at that time could not be expected to embark upon this field of manufacturing activity on a large scale not only because of dearth of financial resources at its disposal but also owing to the long gestation period involved. Only modest beginnings, therefore, could be made by the private sector in the manufacture of equipment and machinery till the establishment of such large-scale units in the public sector as Hindustan Machine Tools and later on the giant heavy engineering complex at Ranchi, the Heavy Electricals, Bhopal, Bharat Heavy Electricals, Hardwar and Tiruchi (amalgamated now



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o Bharat Heavy Electricals (limited), the Mining and Machinery Project at Jharkhand, etc. Currently, the private sector too occupies a prominent place in the machine-building industry.

The progress made by the machine-building industry has been adequately reflected in the export bill of the country. Although imports of machinery and equipment still continue to form an important component of this bill, by and large they are of very sophisticated types involving the most modern technology covered by patents or of items the manufacture of which has not been found feasible as yet because of small demand. In the case of some equipment, the long lead of manufacture indigenously too does not sometimes fit in the tight schedule of projects. Hence imports of these items have to be effected.

Indigenous research

Along with the expansion of the industry, a good deal of sophistication, of course, has come about in it. The sophistication has been effected not only through collaborations with foreign firms, both of the socialist bloc and the western democracies, but also through indigenous research and development efforts. Of late, of course, the emphasis is on the latter. Collaborations with foreigners are being taken resort to on a very selective basis in areas of the most modern technology.

Some of the more sophisticated lines in which manufacture has been started recently include the production of a 2,000 cu. m. blast furnace for the Bokaro steelworks capable of yielding 2,640 tonnes of molten metal a day,

the 27.3 cu. m. coke oven battery for the same steel plant, intricate castings for heavy electricals, electrolyzers for the aluminium industry, magnets for cyclotron for the Bhabha Atomic Research Centre, precision gears for electrical locomotives, special-

purpose machine tools, numerically controlled machines, some critical items for nuclear power stations, high tolerance equipments for many an industry, etc.

Work has also started on the manufacture in near-distant future of 130-t oxygen

converter, a 3,600 mm plate mill and radial type continuous casting machines—all for the expansion of Bhilai to four million tonnes ingots capacity. The machine tools making capacity, which is already in a position to cater for all types of centre and

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being expanded as well as diversified to meet the future requirements.

A Central Machine Tools Institute has been set up by the government at Bangalore to mount the research and development effort. Its facilities can be drawn upon by all the machine tool manu-

facturers. The design organisations, particularly in the public sector have been strengthened a great deal for research and development.

Quality-wise too, a great deal of improvement has been effected in the machine-building industry. This should be evident from the fact that

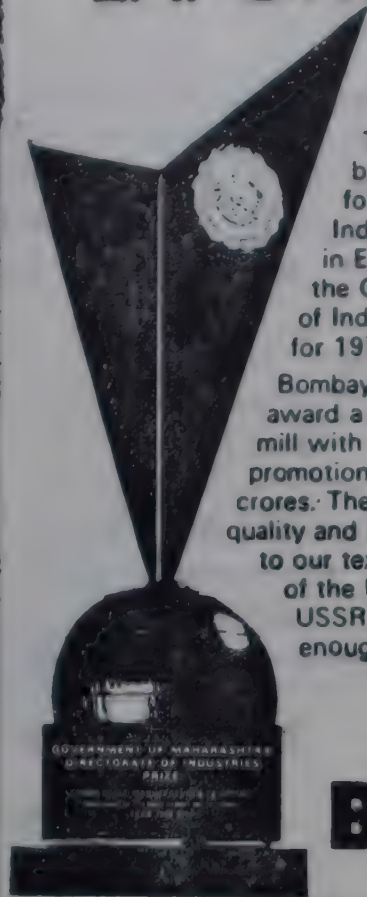
Indian concerns, both belonging to the public and private sectors, have won some prestigious supply contracts abroad in the face of stiff competition from the advanced countries not only in the developing markets but also in such sophisticated markets as those of New Zealand, west Asia.

Equipment and Machinery Manufactured in India

Industry		1971-72	1975-76	1976-77	1978-79	
		Production	Production estimate	(April-Sept.) production estimate	Target capacity	Target production
1. Machine Tools	(Rs million)	512.5	1030	526	1700	1300
2. Mining Machinery (including coal machinery)	(Rs million)	70	85	—	300	200
3. Metallurgical Machinery	(Rs million)	130	320	N.A.	600	380
4. Cement Machinery	(Rs million)	22.4	60	40	260	150
5. Chemical and Pharmaceutical Machinery	(Rs million)	219	485	350	850	650
6. Sugar Machinery	(Rs million)	182	330	194	450	400
7. Rubber Machinery	(Rs million)	1.7	73	N.A.	125	100
8. Paper and Pulp Machinery	(Rs million)	60.6	187.5	67	400	280
9. Printing Machinery	(Rs million)	N.A.	36	N.A.	126	60
10. Cotton Textile Machinery	(Rs million)	664	1000	600	2130	1300
11. Boilers (power and industrial)	(Rs million)	438	1400	609	—	1750
12. Electric Power Equipment						
(i) Steam Turbines	(million Kw.)	0.4*	2.5	N.A.	—	2.5
(ii) Hydro Turbines	(million Kw.)	0.1*	1.2	N.A.	—	1.4
(iii) Transformers	(million Kv.)	7.6*	13.3	5.7	31	20
(iv) Motors	(Million HP)	2.5*	3.5	1.53	6.7	4.5
13. Construction Machinery						
(i) Cranker Tractors	(Nos.)	278£	391	N.A.	600	450
(ii) Dumpers and Scrapers	(Nos.)	215£	310	N.A.	788	450
(iii) Road Rollers	(Nos.)	418	750	N.A.	1900	1200
14. Agricultural Machinery						
(i) Tractors	(000 Nos.)	16.8	33.3	18.8	70	53
15. Rail and Water Transport						
(i) Diesel Locomotives	(Nos.)	145£	80	N.A.	160	160
(ii) Electric Locomotives	(Nos.)	50£	54	N.A.	80	70
(iii) Railway Coaches	(Nos.)	1308£	1000	N.A.	1500	1200
(iv) Railway Wagons (4-wheelers)	(000 Nos.)	8.6	10	0.7†	26.8	15
(v) Ship-building	(000 GRT)	30£	33	N.A.	180.2	130.2
16. Road Transport						
(i) Commercial Vehicles	(000 Nos.)	39.7	43.8	22.8	64	60
(ii) Passenger cars	(000 Nos.)	39.6	22.5	16.1	47.4	32
(iii) Jeeps	(000 Nos.)	11.2	7.1	3.4	13	10
(iv) Scooters, Motorcycles and Mopeds	(000 Nos.)	150.7£	217	132.1	600	320

* 1970-71 £ 1973-74 † January to August N.A.—Note Available.

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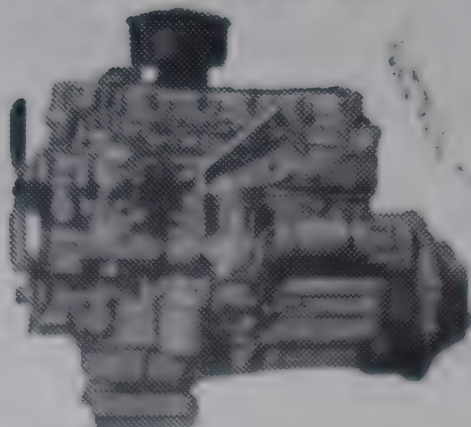
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Canada and West Germany. Original equipment auto ancillaries have been supplied recently from here to West Germany. Boilers have been exported to New Zealand. The Bharat Heavy Electricals has set up a power plant in Malaysia on a turn-key basis. A turnkey contract for putting up a power station has also been secured from Libya. Machine tools are being exported to several African nations. Contracts have been signed for putting up water treatment plants in west Asia and Thailand. The services of our railways consultancy organisation are being increasingly sought after by the developing nations. Sizeable contracts have been received from some of these countries for the supply of railway equipment. As mentioned earlier, some turnkey projects in sugar, textiles, refrigeration, etc., have already been executed by Indian concerns in the neighbouring countries.

export prospects

The beginnings at export of machinery and equipment made recently, howsoever encouraging they might be, have hitherto been the result primarily of inadequate domestic demand following insufficient investment in the industrial sector of our economy—both in the setting up of new projects and expansion of the existing ones. The reasons for the inadequacy of investment in the past few years are not far to seek. Our economy received setbacks during the last 10 years not only because of two conflicts with Pakistan and drought conditions in some years but also owing to rampant inflation which, of course, has been controlled a great deal since September 1975.

Even though some constraints

on fresh investment in the industrial sector still continue, arising out of such factors as sluggishness in consumer demand at the current prices, the vitiation brought about in the capital market by the high interest rates structure and continuing with the profit norms of the pre-dear money era in the interest of containing the prices spiral, etc., the emphasis that has come to be placed lately on the modernisation of the existing capacities

through provision of finance on concessional terms should augur well for a better utilisation of the machine-building capacities.

The provision of investment allowance at the rate of 25 per cent of the cost of new plants and machinery to be installed after March 31, 1976, too is expected to generate new demand for capital goods. So also the energising of the implementation of the current Plan. The impact of the 31 per

cent increase in the Plan outlay this year perhaps has not fully exerted itself. But it should not be long before this enhanced outlay as well as the step up envisaged in the outlays in the next two years have their stimulating effect on the economy.

The liberalisation effected in the industrial policy in the last two years in the interest of expansion of the existing capacities, particularly in the engineering sector, is another help-

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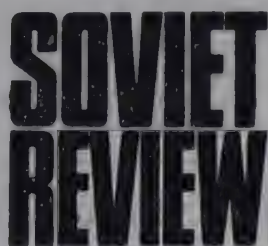
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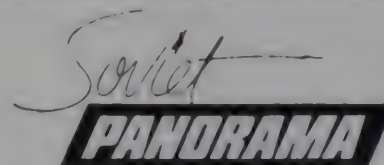
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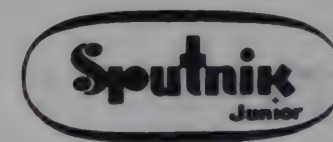
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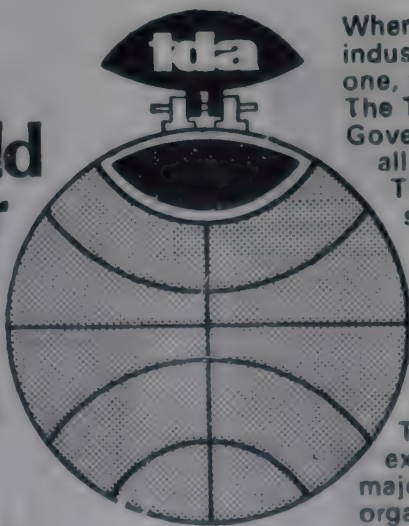
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ful factor. It should not only help in stimulating demand for equipment and machinery but also assist the diversification of the activities of the machine-building industry itself.

The machinery manufacturers in some lines, particularly the textile sector, in which the utilisation of the existing capacities ranges between 50 and 60 per cent, seem to be upset by the liberalisation of equipment imports as evidenced by the proposal to allow the National Textiles Corporation to import equipment for three complete textile units. Their contention that apart from denying the indigenous industry valuable orders, especially when they are capable of executing them quicker than the foreign suppliers as well as at lower costs, such imports can impair the country's image as an exporter of quality machinery, deserves careful consideration.

adverse effect

The manufacturers have no objection to the import of the most modern equipment, but surely the import of equipment that is available in the country is hardly called for unless there are some very special considerations warranting this. It can only be hoped that the liberalisation of imports of machinery and equipment will not be allowed to adversely affect the utilisation of the country's own capacities when comparable supplies can be had from here at competitive prices as well as according to suitable delivery schedules.

The utilisation of the existing capacities in the machine-building industry should improve, as stated above, as a result of the steps being taken to stimulate demand through increased investment in the economy. But the industry

obviously will have to gear itself to exports in a concerted manner if the dependence on domestic order has to be reduced judiciously in the interest of avoiding the sad experience of the past few years when the economy passed through stagnation and recessionary tendencies and the competitive position enjoyed by us at present in the world markets because of our lower costs of production has to be availed of in the long-term interests of the country. The global experience shows that engineering exports can be built up rapidly only through sale of machinery and equipment abroad.

collaboration pacts

The efforts being made at entering into collaboration arrangements with the advanced countries for setting up projects in the third countries are a welcome step in this regard. As the interest shown by the business representatives from the several advanced countries in the recent months is evidence, as also the orders secured for the supply of some equipment to the Russian-aided steelworks abroad, we undoubtedly are in a position to undertake the supplies of various types of equipment for such projects, apart from skilled manpower for putting up these projects. It is encouraging to note that the government would like this country to be not only a provider of skilled manpower to the developing nations but also a supplier of equipment and machinery.

Another heartening development that has taken place in respect of exports of equipment is the realisation of the need for forming consortia of manufacturers so that only quality products are sent out and undue inter se competition

can be contained. Already some such consortia have been formed.

Tie-ups with the concerns of the advanced countries for setting up turn-key projects in the third countries, especially those requiring financial assistance in a large measure, can be helpful for financial assistance can be supplied by the advanced countries. Much in this regard, of course, will depend on the willingness of these countries to have partnership with us as financial assistance by them is provided primarily for boosting the exports of their own equipment and machinery. But even then the scope for such collaboration is not insignificant if note is taken of the fact that a number of projects in third countries are also financed by the world financial institu-

tions and also international bidding for these projects, even if wholly financed bilaterally by the advanced countries, has become highly competitive. The contractors of the advanced countries, in such circumstances, should be interested in securing equipment of the requisite quality from the cheapest sources. They can definitely sub-contract the turn-key projects in the third countries to considerable extents to such manufacturers of equipment as ours.

The case of the oil-rich west Asian nations is different. They have enough funds and do not require financial aid from others. Packages of proposals for turnkey projects in these countries can be drawn up by our manufacturers on their own and also in collaboration with the foreign suppliers of

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equipment for it may not be always possible for us to match the sophisticated requirements of these countries. Such collaborations might be necessary also to overcome the preference of some of these countries for the projects of the western nations.

Apart from the above efforts required to overcome the problem of capacity under-utilisation in the machinery and equipment manufacturing industry, another issue that needs to be attended to expeditiously is the augmenting of supplies of some special types of steel and other materials either through liberal imports or setting up of production facilities within the country.

Some attempts in this regard, indeed, have been made by the steel industry through attuning its product-pattern to the changing requirements of the economy and also creation of new facilities for the production of super alloys. These efforts, it is hoped, will be multiplied after identifying the gaps which exist at present in the supply of raw materials to the machine-building industry and which can be easily filled in anticipation of viable production requirements coming up in the next few years.

In the case of some engineering industries, for instance refrigeration, passenger cars, wagon-building and construction equipment, the demand

recession still persists, although some signs are there of the thinning of the gloomy prospects. The output of passenger cars, which after attaining the level of 42,270 numbers in 1973-74, declined to 30,917 number in 1974-75 and just about 21,600 numbers last year, has picked up to some extent as approximately 16,000 cars had been produced this year by September end. The same is said to be the case of refrigeration and wagon-building industries.

While there are some special handicaps from which the car manufacturers are suffering the most important of them being the high petrol cost and the substantial incidence of state

as well as central taxation on replacement components that make the maintenance of these vehicles prohibitive for many, the production of railway wagons and construction equipment depends largely on government orders and in the case of wagons on exports also. The outlook of the refrigeration industry by and large depends on the general growth of the economy. The problems of these industries and those of the manufacturers of machinery and equipment for them, therefore, will have to be dealt with through specific measures pertaining to them. They may also have to go in for diversification of their product patterns to no insignificant extent.

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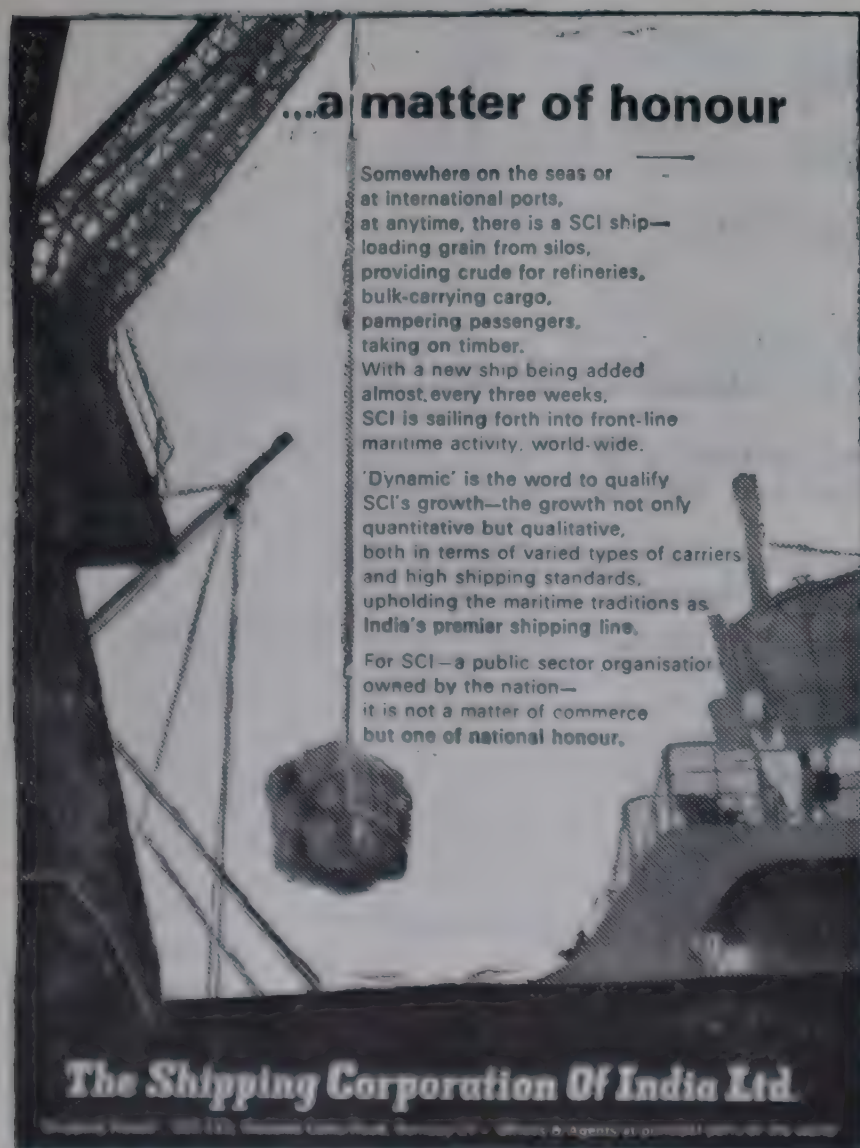
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Hand tools have a bright future

B. P. Mandelia

BEFORE DISCUSSING the prospects and problems of the Indian hand tool industry, let us examine the meaning of the word "hand tool". Hand tool is an implement or object used in performing an operation or carrying on work of any kind; an instrument or apparatus necessary to a person in the practice of vocation or profession; something that serves as a means to an end (from Webster's Dictionary).

The importance of hand tools was recognised even by the most primitive people. Without hand tools it could not have been possible for man to survive; for it would not have been possible to shape and form a bow and arrow, to shape requisite materials giving birth to primitive handloom for weaving cloth or even to cut and stitch hides so that they could be worn by people. Building houses of any kind has been and is quite a complex problem requiring even more advanced types of hand tools.

shaping the world

Evolution of civilization could not have been possible without the evolution of hand tools. Perhaps, therefore, it is not wrong to say that hand tools have been the most important single factor responsible for the shape of the world we live in and the one we dream of.

This brings us to the subject of development of hand tools from time to time. Without going into the past developments, we shall talk of the need of research and develop-

ment (R & D) in this field. In India although the hand tool industry, in the organised sector, has existed since 1962, not much emphasis was laid on the need for research and development, the reason being that the industry solely depended on foreign collaborators. However, this trend was broken by the limited R & D efforts put in by one of the hand tool manufacturers in the organised sector in the year 1973.

labour intensive

The hand tool industry being labour intensive, our country offers an extremely vast scope for its development in the context of exports. For this reason alone, R & D in this field gains immense importance. The other reasons in its favour are :

(a) To be able to offer a much wider range to overseas customers;

(b) To improve the image of the country as a major hand tool supplier and thereby get better prices than being obtained now;

(c) To rely on indigenous technology and develop a base for taking care of future needs;

(d) To take a lead in the hand tools field in the third world countries by transfer of technology and establishment of joint ventures;

(e) To cut down on imports of special purpose tools and save foreign exchange;

(f) To take a lead in hand tools technology in the world ultimately.

Following are the classifications of ultimate consumers of hand tools:

(a) Professionals, industry;

(b) Serious minded hobbyists; and

(c) Household, do-it-yourself enthusiasts.

The hand tools can be classified into numerous categories, but the broad categories are:

(a) Mechanic's hand tools;

(b) Electrician's hand tools;

(c) Plumber's hand tools;

(d) Carpenter's hand tools;

(e) Mason's hand tools;

(f) Gardener's hand tools;

(g) Electronic tools;

(h) General purpose tools such as scissors, snips etc;

(i) Special purpose hand tools.

world market

The total world market for hand tools is currently estimated to be about Rs 12,000 million, the most important markets, on the basis of their requirements, being the USA and the EEC countries. Annual sales of all types of tools in the USA are of the order of US \$1.5 billion and it is also reported that West Germany alone has a production and import requirement of US \$0.79 billion. If we were to total up the consumption of all the EEC countries, it will work out far more than that of the USA. Table I gives, item-wise, India's exports to the USA, West Germany, other EEC countries and rest of the world for the year 1974-75, and Table II gives a breakup of various types of tools being imported by West Germany and the USA.

An analysis of these figures will indicate that the pattern of Indian hand tools exports is

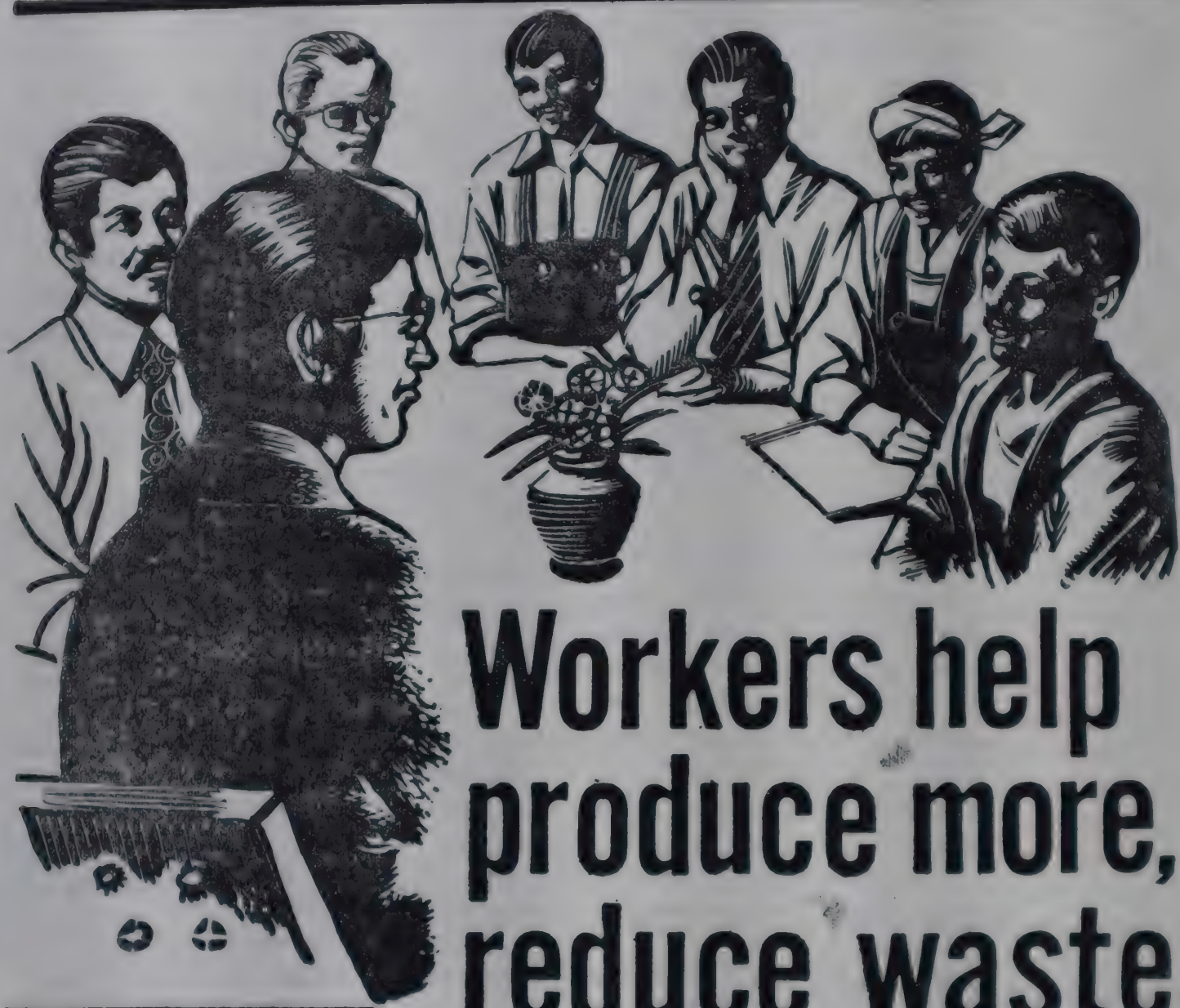
not what is required by the major importers. A detailed study of these markets to find the pattern of consumption is, therefore, very essential. A broad analysis reveals that whereas the requirement of pliers in both the above mentioned areas i.e. the USA and EEC countries is high, the Indian hand tool industry is concentrating more on spanners and pipe wrenches.

India's export of hand tools in 1974-75 has been reported to be of the value of Rs 145.36 million. This is about 1.2 per cent of the total world demand of about Rs 12,000 million. Although, since 1965-66, when exports of hand tools from India started, up to the year 1974-75 we have achieved an increase of over 63 times, the fact that India's share in the world market is only 1.2 per cent amply clears any doubt about prospects of this industry.

reason for lag

The prospects of the industry being so good, let us try to examine the reasons which have been responsible for such limited development of the industry in the country. The present total installed capacity is 11,770 tonnes (Guideline for Industry—1976-77); whereas the total annual production of hand tools in the year 1974-75 has been estimated to be of the order of 8,000 tonnes. Assuming that about 60 per cent of the total production was exported, the total tonnage exported representing India's share of 1.2 per cent in the world market comes to 4,800

Mr B.P. Mandelia is president of the Hindustan Everest Tools Ltd.



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ness. As against this, a short time back, the tonnage for which letters of intent/licences under the IDR Act were issued was 75,170 tonnes (Hand Book of Industrial Data 1975). After this capacity was sanctioned by the government, in spite of a number of years having passed, most of it lapsed as the entrepreneurs did not implement their projects. However, even if 50 per cent of this capacity had materialized, it would have provided our country a production base of about 40,000 tonnes. Assuming only 50 per cent of this capacity had been utilised for exports, India's share in the world market would have gone to about 3.5 per cent and would have

increased the foreign exchange earnings by about Rs 290 million. The obvious questions, therefore, are 'why did this entire capacity lapse'? In other words, "why did the entrepreneurs not materialise the authorised capacity"? The reason for this is very obvious from the two tables given above.

Whereas the demand in the world market is for an extremely wide range of hand tools, the past exports from India have been mostly confined to spanners and pipe wrenches and the new capacity which was sought to be generated was also for similar items only. The competition in the field of spanners and pipe wrenches has been quite inten-

sive because of cheap and low quality tools being offered by south east Asian and some other countries. In view of this factor, to be able to export even spanners and pipe wrenches profitably, the Indian entrepreneurs will have to acquire a high standard in quality and a reputation for their products. The second factor—acquiring of a high reputation—being a time consuming process, the immediate results projected by the entrepreneurs were not very profitable and therefore most of the projects were dropped. If, on the other hand, the Indian entrepreneurs had looked in the direction of producing other types of hand tools rather

than spanners and pipe wrenches and had taken the support of Indian manufacturers to provide them the know-how for such items which are being manufactured in the country, depending on the foreign know-how only for such items for which indigenous know-how is not available, it can be asserted that their projections would have been entirely different.

During the last 18 months the industrial and growth climate in India has changed for the better. The total engineering goods exports from India have touched an all-time high figure in 1975-76 and the targets for the future are even higher. Taking a cue from

TABLE I
India's Exports of Hand Tools—Country-wise

(FOB value in Rs million)

Item	USA		West Germany		Other EEC countries		Rest of the world		Total	
	Value	% of total	Value	% of total	Value	% of total	Value	% of total	Value	% of total
Pipe wrenches	16.9	86.20	0.2	4.00	1.7	10.56	9.2	18.36	28.3	30.86
Pliers	0.1	0.51	0.6	12.00	0.5	3.11	3.8	7.59	5.1	5.56
Spanners	0.5	2.57	2.8	56.00	10.3	63.28	24.3	48.50	38.0	41.44
Vices	0.3	1.53	1.3	26.00	2.3	14.98	3.8	7.59	7.8	8.51
Others	1.8	9.19	0.1	2.00	1.3	8.07	9.0	17.96	12.5	13.63
Total	19.6		5.0		16.1		50.1		91.7	

TABLE II
Imports of Hand Tools by West Germany and USA

(DM. in millions)

Item	1972		1973		1974		1975	
	Value	% of total	Value	% of total	Value	% of total	Value	% of total
Hand saws	3.5	8.65	2.13	8.41	7.26	13.36	6.34	13.21
Pliers	12.06	29.82	6.80	26.97	15.17	27.92	11.62	24.20
Punch plier, bolt clipper	1.46	3.61	0.75	2.98	1.40	2.58	0.91	1.90
Sheet metal shears	0.50	1.24	0.38	1.51	0.68	1.25	1.14	2.37
Fixed spanners & wrenches	12.40	30.66	7.88	31.27	16.58	30.52	13.99	29.14
Adjustable spanners & wrenches	1.38	3.41	0.67	2.67	1.25	2.30	4.13	8.60
Hammers	2.48	6.13	1.46	5.79	2.85	5.25	2.48	5.17
Vices & clamps	4.03	9.97	3.48	13.80	5.94	10.93	4.99	10.39
Screw drivers	2.63	6.51	1.66	6.58	3.20	5.89	2.41	5.02
Total	40.44		25.21		54.33		48.01	

these developments, the hand tool sector has also started thinking in new directions.

In order to achieve these targets, the salient factors are:

(a) The industry must acquire modern technology for the production of such hand tools which are not being manufactured in the country and must have the potential to develop any type of technology required to increase its range;

(b) The small-scale sector must be encouraged to act as ancillary to the large-scale sector and should be provided with proper technical assistance, know-how, inputs and marketing assurance;

(c) The government should emphasise on the setting up of 'in-house R & D' and should set up hand tool institutes in different regions of the country to provide basic technological know-how.

As has been mentioned earlier, in order to increase India's share in the world market the range offered has to be much wider than at present.

With the installation of the hand tool institutes and the institution of 'in-house R & D', it is expected that within a short time this industry will be able to offer a wide range of hand tools as required by the sophisticated export markets.

The world market requires various blends of quality, price and packaging besides on-the-dot-delivery commitments. The product-mix will vary according to the type of market, which is sought to be penetrated. In India we have the required technology, inexpensive skilled manpower and the infrastructure. What remains is to match our assets with the requirements of the world market and to explore:

(a) How to increase our price realisations in the do-it-yourself category of tools?

(b) How to penetrate the better quality and high-priced markets of the professionals and serious-minded hobbyists?

(c) While it has been indicated by a survey that certain West German manufacturers of hand tools are interested in having definite long-term relations for imports with manufacturers in India, serious

efforts have not been made in this direction as yet. How can this linkage be achieved?

(d) Can semi-finished goods and components of hand tools be exported?

(e) What are the items for diversification which will have a long-term and consistent demand in the foreign markets?

Various departments of the

government have started examining the prospects of the hand tool industry. The opportunity offered today to the country, as such, is lucrative enough for the existing industrialists, future entrepreneurs and the small-scale industry to join hands and evolve a master plan in consultation with government.

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Out of the woods

S. P. Chopra

Unlike the basic and capital goods industries, the rate of progress of the intermediate industries (including jute manufactures, petroleum refining, tyres and tubes etc.) since 1960 has been rather hesitant. While the output of basic industries improved by 244 per cent and that of capital goods industries by 223 per cent between 1960 and 1976, the intermediate goods industries stepped up their production by 92 per cent only during the same period. From 1972 to 1975, these industries were in the firm grip of stagnation, the index of production for these industries ranging between 171 and 174 during this period. It was only in 1976 that a rise of 10.4 per cent in output was witnessed thanks to the revival in jute manufactures, cotton yarn, viscose yarn, nylon filament yarn, polyester fibre, petroleum refinery products, dry cells etc.

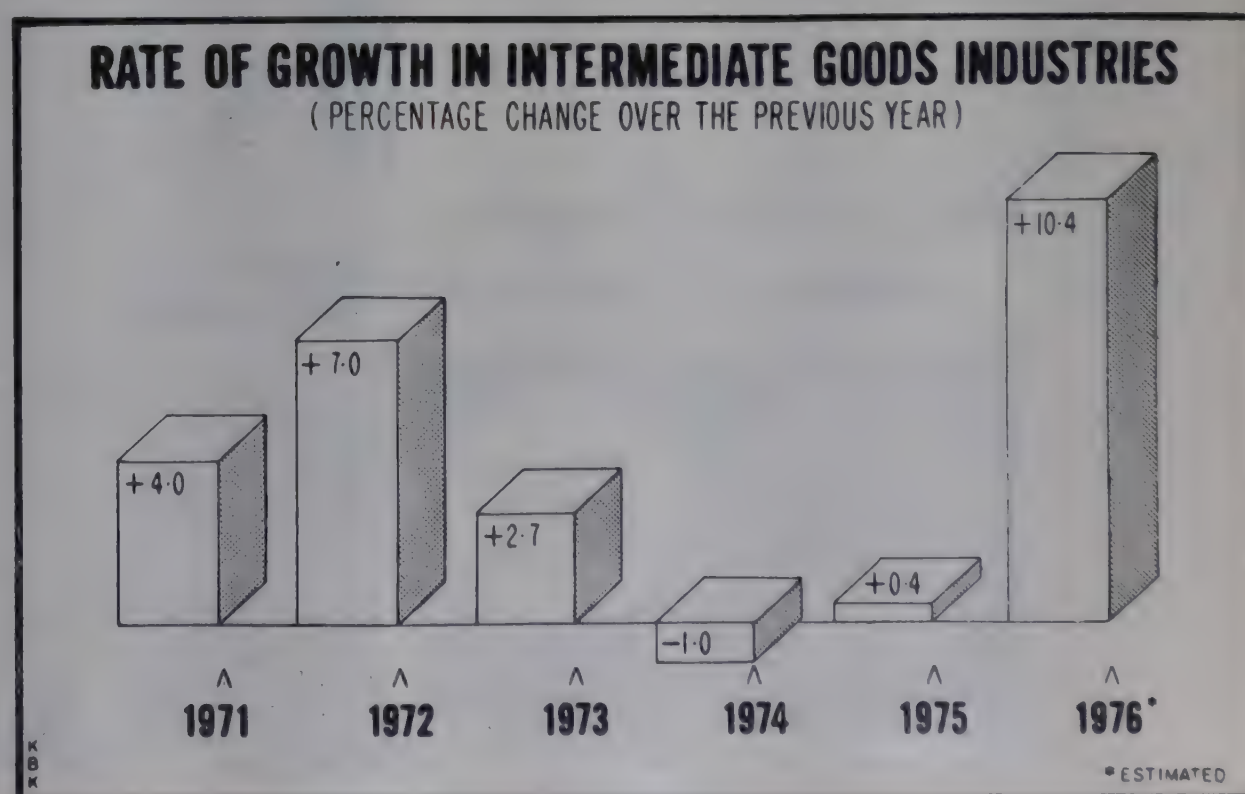
jute in jitters

The jute industry is one of the leaders in this group of industries. With nearly 70 units having capital investment of the order of 240 crores, total installed capacity of jute industry is estimated to be around 1.32 million tonnes. No less than 400,000 persons are provided gainful employment in industry and trade while jute cultivation engages two million persons. In 1964-65, the production of jute manufactures attained an all-time peak at 1.32 million tonnes; since then, its performance has remained below this level with vast fluctuations from year to year. The lowest production at 937,000 tonnes was recorded in 1973-74, followed by 939,000 tonnes in 1974-75 and 1.14 million tonnes in 1975-76. The central ill from which this industry is suffering is its inability to compete with synthetics and jute goods from other countries such as Bangladesh due to

the ever-increasing pressure of mounting costs. It is jute which has been losing ground fast in the world markets. On the other hand, sacking and other manufactures including carpet backing and canvas have succeeded in holding their own in the international markets. But what needs to be emphasised is that this industry no longer occupies an important position in the list of our export industries. In 1965-66, the share of jute goods in total exports was as high as 22.7 per cent, in 1965-66, it got reduced to 6.3 per cent only. Surely, during the decade under reference, the industry lost its premier position as the largest earner of foreign exchange. What is more the jute companies have not been able to earn adequate return on capital employed. According to the Reserve Bank of India's study of 44 jute companies from 1970-71 to 1974-75, the working results in three years—1970-71, 1972-73 and 1973-74—were discouraging. Only in 1971-72 and 1974-75, the jute companies were

able to exhibit profitability which was comparable to the performance of the industry in general. Coupled with declining demand for jute goods which has been hurting its profitability, its inability to modernise itself is also responsible for its poor results. Unless this industry is able to replace its present worn out machinery by modern machinery, it will not acquire the capability to face competition in foreign markets. The Bose Mullick Committee is currently looking into the ills which plague it. Only when the findings and recommendations of this report are made available, the government is likely to chalk out the measures for improving its working.

The other industries which put up a remarkable performance in 1976 were cotton yarn, viscose yarn, nylon filament yarn and polyester fibre. The prices of cotton imported from abroad being high, the man-made fibre industry pushed up its output to seize a part of the market vacated by cotton. In fact, the cotton mills were asked to use 10



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er cent of man-made fibres in place of cotton.

The tyres and tubes industry however was in bad shape and was expected to close 1976 with a slight fall in production over the preceding year. The sluggishness in demand for vehicles in the wake of the steep rise in the price of petroleum has hit this industry hard. On top of that, new units are coming up to increase the supply in the market. The short-term outlook

for this industry does not look to be very hopeful.

The dry cells are also facing a recession in demand though their output in 1976 is reported to have risen by eight per cent over 1975. Like tyres and tubes, demand in this case is also lagging behind supply with the result that many of the new manufacturers are in the red.

The petroleum refinery units kept up

their rate of growth at six per cent in 1976. Since the last quarter of 1973, the demand for petroleum and its products has remained subdued but in the next two to three years it is likely to speed up, the only constraint being the rising price. From January 1, 1977, the oil-exporting countries will raise the prices of crude oil from five to 15 per cent and this is bound to escalate prices in the country which in turn is expected to curb consumption.

Production in Intermediate Goods Industries

Industry	Weight (1970=100)	Unit	Production during					Percentage change		
			1971-72	1972-73	1973-74	1974-75	1975-76	1973-74	1974-75	1975-76
							(Prov.)			
								1972-73	1973-74	1974-75
Giant tyres	0.8669	Th. Nos.	2324	2408	2602	2776	2743	+8.1	+6.7	-1.2
Other than giant tyres	0.1369	"	1927	1987	2061	2058	1994	+3.7	-0.1	-3.1
Cycle tyres	0.1685	Lakh Nos.	227.4	204.4	240.4	250.5	242.5	+17.6	+4.2	-3.2
Tractor tyres	0.0383	Th. Nos.	248	274	307	311	372	+12.0	+1.3	+19.6
Giant tubes	0.0732	"	2190	2371	2518	2493	2625	+6.2	-1.0	+5.3
Other than giant tubes	0.0189	"	2012	1900	1763	1691	1896	-7.2	-4.1	+12.1
Cycle tubes	0.0688	Lakh Nos.	145.0	139.1	162.2	185.9	165.9	+16.6	+14.4	-10.6
Rubber footwear	0.4389	Lakh Pairs	451.9	405.6	388.0	386.3	393.6	-4.3	-0.4	+1.9
Cotton yarn	6.2438	Mil Kgs.	902	972	1000	1025	1005	+2.9	+2.5	-2.0
Viscose yarn	0.1488	Th. tonnes	37.8	39.5	37.0	36.1	35.6	-6.3	-2.4	-1.4
Acetate yarn	0.0534	"	2.0	2.1	2.1	2.3	2.0	—	+9.5	-13.0
Nylon filament yarn	0.4395	"	10.4	12.6	10.3	11.2	14.2	-18.3	+8.7	+26.8
Polyester fibre	0.1404	"	5.7	8.6	10.6	9.8	16.8	+23.3	-7.5	+71.4
Plute manufactures	2.7112	"	1274	1212	1074	1049	1302	-11.4	-2.3	+24.1
Azo dyes	0.0783	Tonnes	2363	2458	2580	2160	2575	+5.0	-16.3	+19.2
Wat dyes	0.4094	Tonnes	963	1195	1237	1047	1122	+3.5	-15.4	+7.2
Paints and varnishes	0.2351	Th. tonnes	66.4	70.9	68.6	56.9	64.4	-3.2	-17.1	+13.2
Petroleum refinery products	1.6200	"	18640	17838	19531	19618	21040	+9.5	+0.4	+7.2
Plywood (tea chest)	0.1680	Mil. Sq. Metres	4.7	3.3	3.3	3.9	3.1	—	+18.2	-20.5
Plywood (commercial)	0.2320	"	24.3	29.2	30.4	31.3	28.2	+4.1	+3.0	-9.9

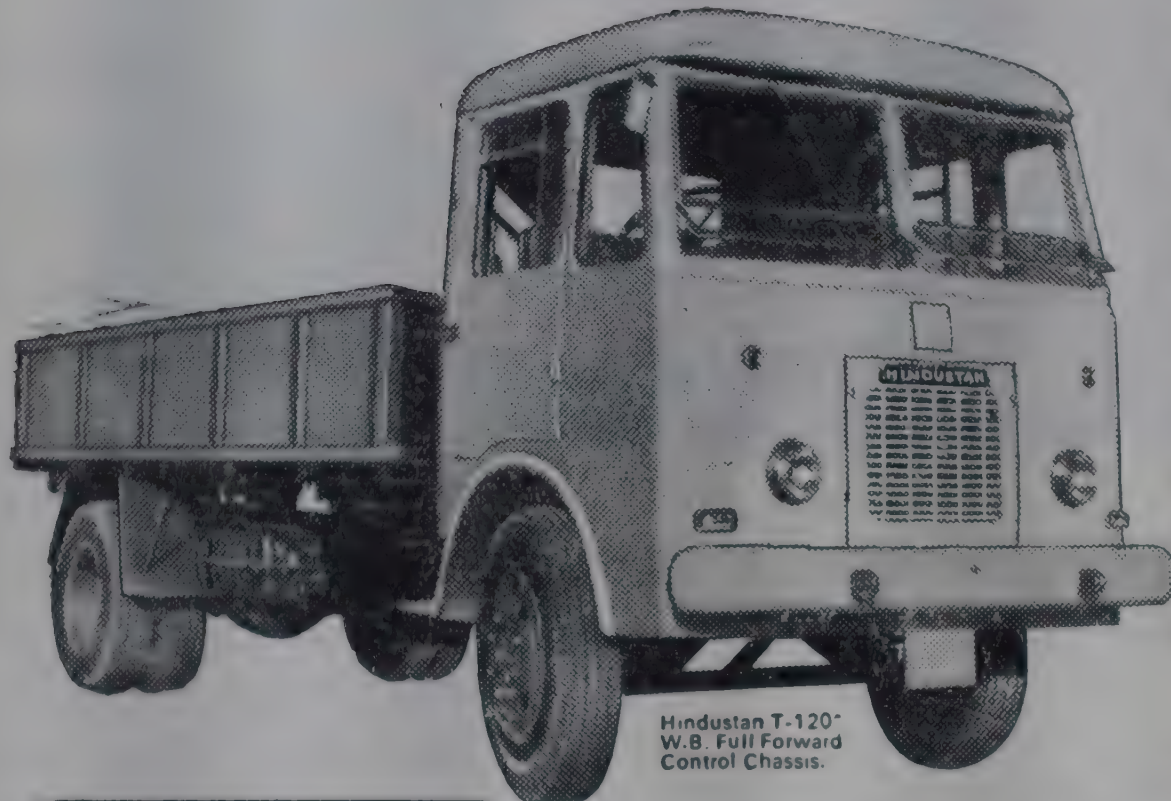
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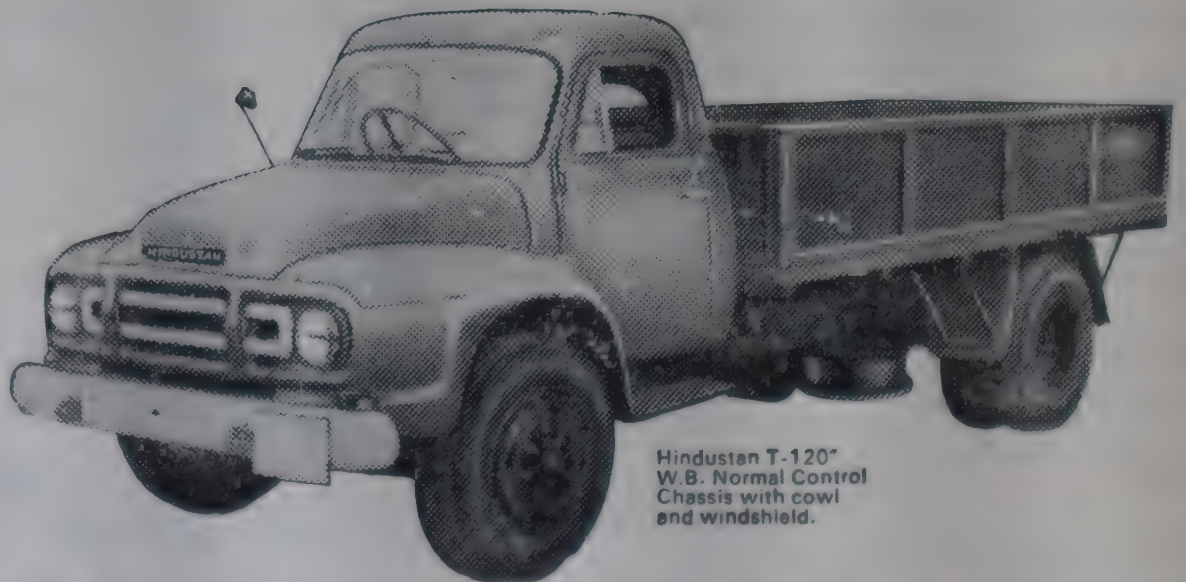
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Jute industry: unsold story

R. J. Venkateswaran

INDIA'S JUTE industry passed through another critical year during 1976. Though the government of India adopted several measures to revive the industry and strengthen its competitive capacity they did not have the desired effect because the approach was rather half-hearted and not made in an integrated manner. The government set up a 13-member committee in the beginning of the year under the chairmanship of Mr Bose-Mullick, the Commerce secretary, to study the major problems of the industry and make appropriate recommendations for improving its health. The appointment of this committee raised hopes in the industry that the government would take timely and effective steps on the basis of its report and that, as a result, it would be able to play its role effectively in the country's foreign trade.

Industry's proposals

The industry had made several proposals to this committee for increasing the demand for jute goods, for reducing the cost of production, and for improving its viability. It had suggested regulation of production according to foreign demand, reduction of bank margin to 10 per cent, provision of soft loans, offer of fair prices for purchases made by the Directorate General of Supply and Disposals, abolition of export duties, extension of cash assistance which was available for carpet backing and specialities to hessian, cotton bagging and new

woolpacks, and removal of the excise duty. The industry had also made some suggestions regarding the need to reimburse the shipping freight charges when they exceeded 15 per cent of the f.o.b. price, provision of liberal export credit, and abolition of the raw jute tax, entry tax, sales tax and multi-point sales tax, and linking of wages to productivity.

Urgent problems

It was, of course, not expected that the Bose-Mullick committee would accept all the suggestions of the industry or that the government would agree to implement its report in full. But it was thought that the government would promptly deal with the more urgent problems of the industry and thereby enable it to operate on a profitable basis. The report of the committee has not been officially released but it is understood that it had made several recommendations favourable to the industry. For instance, the committee was reported to have favoured the abolition of the excise duty. But the government declared that it had no such intention. The government, however, removed the export duties on all jute goods. But this step was taken too late. Moreover, this step should have been followed by other appropriate measures to strengthen the industry's capacity to compete effectively in foreign markets. But New Delhi has been slow in this direction.

The export of various categories of goods has steadily

declined in recent years. The export of hessian fell from 289,300 tonnes in 1970-71 to 224,500 tonnes in 1975-76, sacking from 98,400 tonnes to 62,200 tonnes, carpet backing from 195,800 tonnes to 149,000 tonnes, and other categories from 54,800 tonnes to 35,900 tonnes. There has also been a fall in exports in terms of value. The trend in exports is shown in Tables I and II and in production in Table III. From time to time, the industry drew the attention of the government of India to the falling demand for its products due to competition from synthetics and from Bangladesh. But the measures taken by New Delhi have not yet had the expected impact.

For instance, in April 1976 the government set up the Jute

Manufactures Development Council under the Industries (Development & Regulation) Act of 1951. The council is expected to deal with research, development, promotion of export, standardisation, cost control, quality control, product diversification, and improvement of productivity. Inaugurating the council, Prof D.P. Chattopadhyaya, the Commerce minister, said: "We thought that we should not restrict the style of functioning of the Development Council and, hence, have included in the list of activities of the council almost all the functions that have been enumerated in the Schedule to the IDR Act. It would, of course, be unwise on the part of the Development Council, in the initial period of its life, to

TABLE I
Export of Gunnies from India

('000 tonnes)

July/ June	Hessian	Sack- ing	Carpet back- ing	Others*	Total	% variation in each year over the pre- vious year
1970-71	289.3	98.4	185.8	54.8	628.3	—
1971-72	276.7	141.2	223.9	64.9	706.7	12.48
1972-73	253.6	73.2	151.1	73.0	550.9	-22.05
1973-74	221.0	102.1	169.4	72.7	565.2	2.60
1974-75	278.0	128.2	101.3	59.2	566.7	0.26
1975-76	224.5	62.2	149.9	35.9	472.5	-16.62
1976-77						
July '76	10.1	3.1	4.5	1.9	19.6	
Aug '76	15.0	4.9	7.7	2.4	30.4	

* It includes cotton bagging, canvas, tarpaulin, webbing, yarn rope and twine, coated fabrics, linoleum, carpet, mat and matting.

Source : Monthly Summary of Jute and Gunny Statistics—IJMA.

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tempt to give attention to all the functions enumerated. It would be far better to concentrate on those functions, which are of immediate importance, thereby seeking to make an impact, which would be of benefit both to the industry itself and the nation".

The minister described the problems before the industry as follows: "The plea now being taken by the jute industry is that competition from synthetics and from other countries is forcing it to sell its products at prices which are even below the cost of production. But the industry cannot hope to survive for any length of time unless measures are adopted by it to reduce costs

so as to enable it to sell its products at prices that can match those quoted by its competitors. Reduction of cost of manufacture need not necessarily mean a reduction in the prices being paid to the various inputs like raw material, labour etc. Reduction in cost will have to be brought about, more effectively, by increasing productivity. Reduction in wastage, for example, will lead to saving in raw material consumption and measures for increasing the productivity of labour will bring down the proportion of wage cost to the total cost of manufacture. These areas of improvement are, of course, known to the industry but it would appear

that no concerted efforts have so far been made either to increase productivity or to reduce waste in the manufacturing processes". It is pertinent to ask what steps were taken by the Commerce ministry to persuade or pressurise the industry to implement programmes of cost reduction. The minister reminded the industry that the days were over when the jute industry could think in terms of merely waiting for the customer to come to it. He said that the industry now would have to go all-out to sell its products and some "aggressive salesmanship" would be called for, if the Indian jute goods had to continue to command a market in other coun-

tries. But how could the government expect the industry to resort to "aggressive salesmanship" when it was losing heavily month after month?

As Mr J.P. Goenka, chairman of the council, said at its inauguration, "The greatest threat to the existence of the jute industry today is the lack of its viability. The losses suffered in manufacturing and marketing the products at the current levels of cost and sale prices are eating into the very vitals of the industry. Revival can only come if the industry is financially capable of undertaking development efforts. The responsibility for the present state of the industry should be shared both by the

TABLE II
Value of Exports of Gunnies from India

(In lakh of rupees)

July/ June	Hessian	Sacking	Carpet backing	Cotton bagging	Others	Total value of jute goods	% variation in each year over the previous year	Jute goods as % of total exports
1970-71	10169.9	2515.3	7833.6	659.8	656.0	21834.6	—	14.0
1971-72	12129.5	4249.5	10705.8	901.0	961.4	28947.2	32.57	17.5
1972-73	11536.6	2235.7	7781.9	984.6	945.3	23484.1	-18.87	11.8
1973-74	10248.5	2987.5	8262.1	914.1	1076.6	23488.8	0.02	8.8
1974-75	16584.2	5136.6	5775.4	776.1	1145.6	29417.9	25.24	8.5
1975-76	10273.4	2274.7	7890.2	123.6	1406.8	21968.7	-25.32	N.A.
1976-77								
July'76	452.6	100.3	235.3	8.6	71.2	868.0		N.A.
August'76	677.7	151.9	400.8	—	109.4	1339.8		N.A.

Source : Monthly Summary of Jute and Gunny Statistics—IJMA.

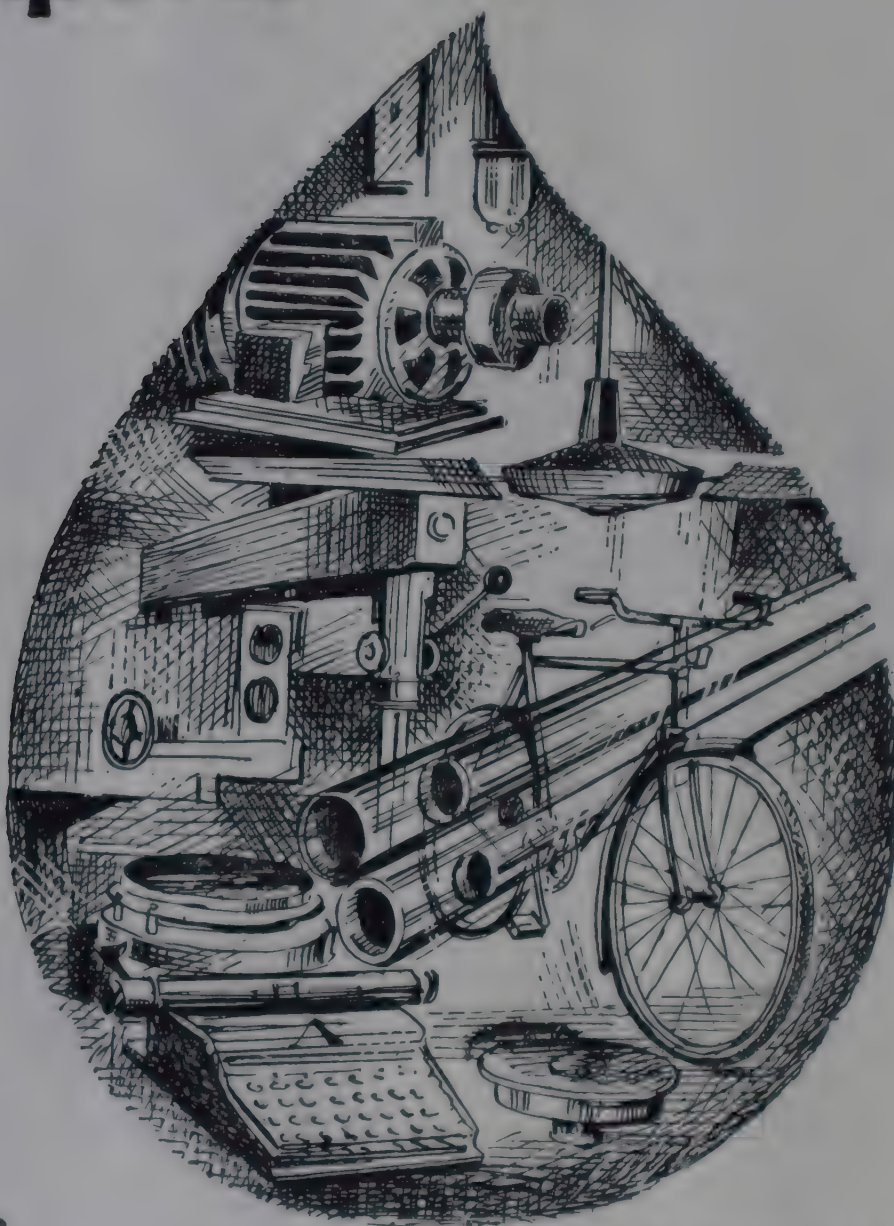
TABLE III
Production of Gunnies

('000 tonnes)

July-June	Hessian	Sacking	Carpet backing	Cotton bagging	Others	Total production	% change over the previous year
1971-72	331.0	498.8	218.5	29.8	59.6	1137.7	
1972-73	334.7	443.9	152.8	44.0	68.6	1044.3	-9.30
1973-74	295.7	376.1	165.0	40.8	58.9	936.5	-19.90
1974-75	333.9	429.4	92.5	27.4	55.7	938.9	0.26
1975-76	282.7	620.0	159.8	0.9	12.6	1136.0	20.99

Source : Monthly Summary of Jute and Gunny Statistics—IJMA.

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government and the industry. Whenever we have introduced special reliefs, this has been done too late. The industry has not taken advantage of periods of prosperity to modernise its equipment and reduce costs". Mr Goenka did well in admitting the industry's responsibility for its present plight. But the fact remains that the Jute Manufacturers Development Council has not been able to start its work with right earnest due to inadequate funds and uncertainty about the prospects for the industry.

Modernisation of industry

In the meanwhile, the problem of modernisation has been taken up both by the government and the industry. The government set up a committee under the chairmanship of Mr M. Narasimhan, additional secretary, Department of Economic Affairs, to assess the funds required for modernisation. The industry submitted to the committee that it would need about Rs 250 crores for implementing the scheme of modernisation and renovation, of which Rs 100 crores would be required for importing machinery. The industry suggested that such imports should be allowed free of duty, that it should be given interest-free loans without margin, and with a moratorium on repayment of the principal for the first five years, that the debt-equity criterion should be relaxed, and that the convertible clause should not apply. The industry asked for these facilities on the ground that because of uneconomic working for a long period, its financial position had become weak and that it had no money even to make the initial

payment to the manufacturers of machinery.

The government announced its decision on the Narasimhan Committee's report in October. Under the scheme, priority would be given to modernisation of the spinning (including preparatory section) and the processing sections. The loans would carry an interest of 7.5 per cent per year and repayable over 12 to 15 years with an initial moratorium of three to five years. Government also agreed to consider moratorium on interest payment in deserving cases and to waive the convertible clause. The government's scheme however does not seem to have created much enthusiasm on the part of the industry not only because the terms of assistance are not liberal enough but because the prospects of profitable working in the immediate future are far from encouraging. It is not also clear to what extent labour will cooperate to enable the industry to expedite its modernisation programme.

a disincentive

The industry has observed that there will not be much incentive to modernise if it has to retain a larger number of workers than is necessary, besides carrying the burden of heavy depreciation over new machinery. It is worth noting however that in the last 16 years the industry had spent Rs 135 crores on modernisation and renovation, of which only about Rs 40 crores came from government institutions.

As regards raw jute, the estimated supply and distribution position during 1975-76 was as given in Table IV,

according to the Indian Jute Mills' Association :

TABLE IV
Estimated Supply and Distribution
Position (1975-76)
(In lakh bales)

Supply	
Opening Stock	
With mills and stockists	24.0
With Jute Buffer	1.0
Crop	55.0
Imports*	2.0
Total	82.0
Distribution	
Consumption	
At mills**	77.0
At villages	2.0
Exports	1.0
Total	80.0
Estimated carry-over into 1976-77	2.0

*Contract already signed.

**Estimated on the basis of actuals for July-December 1976.

According to the Calcutta Baled Jute Association, production of raw jute during the current season would be more than sufficient to meet the domestic needs so as to provide for some export. The association has estimated that the total availability would be 84 lakh bales with a production of 72 lakh bales against 58 lakh bales in the previous season and the carry-over of 12 lakh bales. After providing for village consumption and the requirements of mills, a surplus of 20 lakh bales has been estimated. The association has argued that with this surplus there would be no risk in allowing an export of two lakh bales. As usual, there have been differences regarding the actual availability of raw jute and the desirability of exporting it. The Indian Jute Mills Association has urged that export should be allowed

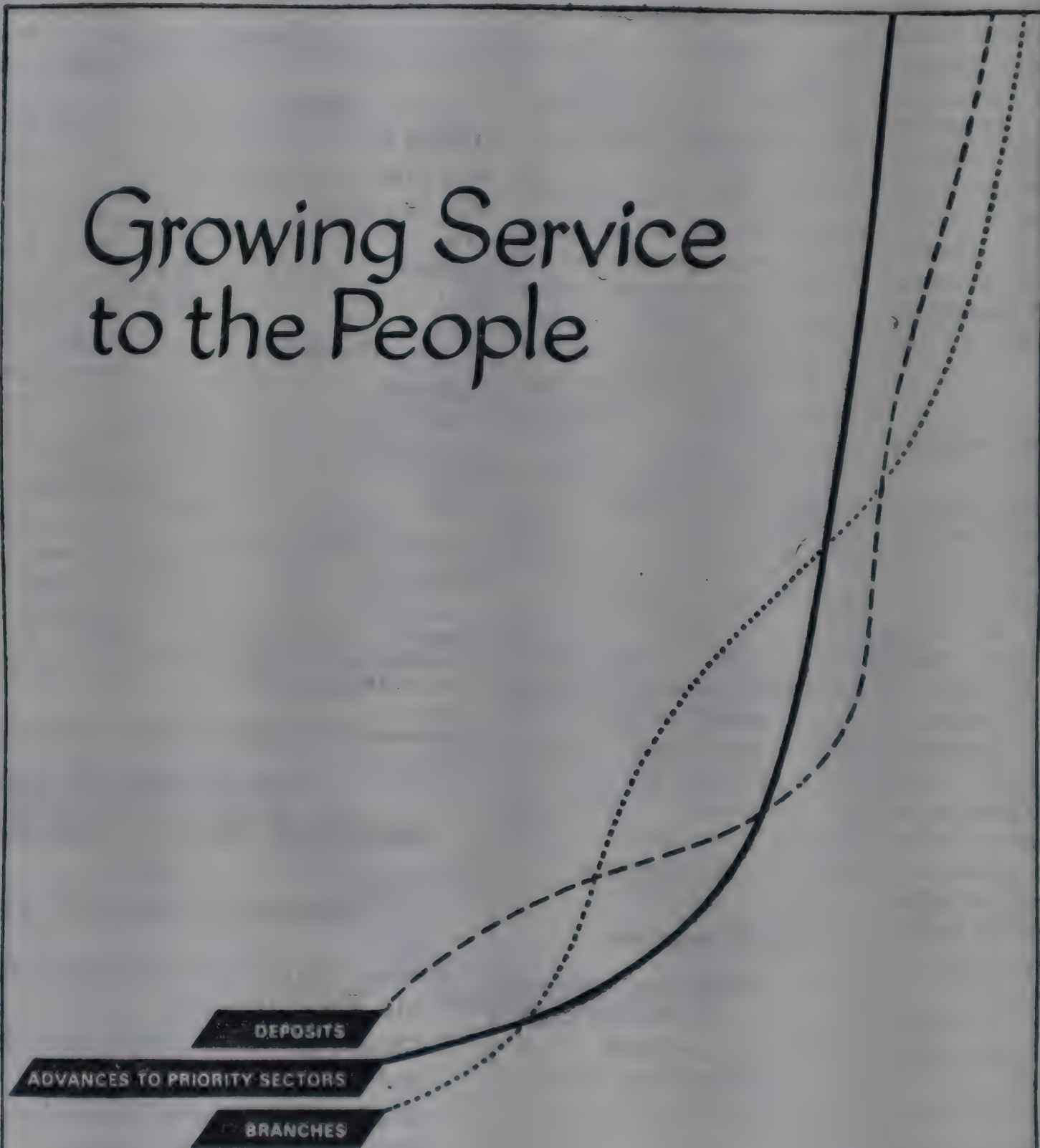
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only to the extent to which it is necessary to fulfil bilateral trade agreements and that whenever there is a surplus, the balance should be used to build a buffer stock. But the important point to be noted is that the yield per acre of jute has not shown any significant increase in the last two decades. Though much progress has been made in research to evolve methods for achieving higher yields and improving the quality of the fibre, it seems that its results have not yet percolated to the field. The average price of raw jute (Assam Bottom) in January-June 1976 was Rs 72.57 per pound compared to Rs 59.14 in 1966 and Rs 64.63 in 1975.

The industry has reiterated its anxiety to secure a fair deal to the growers of raw jute but has suggested that this will be possible only when the government provides adequate credit to the Jute Corporation, en-

surances uninterrupted movement of raw jute from the agencies to the consuming centres, creates additional storage facilities and evolves a machinery to operate an international buffer stock. The proposal for the creation of a buffer stock of jute and jute goods was also made by Mr Gamani Corea, the Secretary-General of Trade and Development, in Geneva recently. He said that the stocking arrangement is "both technically feasible and economically desirable" and that such an arrangement could play "a crucial role in improving the competitive position of jute". He added that it would give "a vital breathing space until longer-term measures of cost reduction and demand expansion could bear results".

A major development during 1976 was the finalisation of the constitution of the Jute International, an organisation which has been set up for pro-

moting the marketing of jute goods. Its head office will be in New Delhi while its technical wing will be located in Dacca for conducting research. The Jute International will have a ten-member board of directors of which four each will be from Bangladesh and India and two from Nepal. It seems doubtful however if the Jute International will be able to fulfil its role effectively.

The doubt arises because under its constitution, the decisions of the board of directors will have to be unanimous. But will Delhi and Dacca see eye to eye with each other on all major issues relating to jute? Mr M.S.H. Chishty, additional secretary to the Bangladesh Jute ministry, said in Calcutta on October 16 this year that the Jute International did not envisage a common ex-

TABLE V
Stocks of Jute Manufactures

('000 tonnes)

Month	Hessian	Sacking	Carpet backing	Others	Total
April '76	34.9	37.0	23.7	16.1	111.7
May '76	35.4	48.5	26.3	15.0	125.2
June '76	38.2	62.7	27.1	17.1	145.1
July '76	39.2	75.9	27.8	17.6	160.5
Aug '76	40.8	84.2	25.5	11.3	161.8
Sept '76	42.9	82.7	23.2	9.7	158.5
Oct '76	40.1	72.1	21.3	10.0	143.5
Nov '76	39.3	60.4	18.1	10.5	128.3

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pricing strategy for jute goods but only a joint effort to reduce production cost in order to compete with synthetics.

In this context, it may be mentioned that the production of jute goods in Bangladesh for the year ended June 1976 was 485,592 tonnes, consisting of 163,842 tonnes of hessian, 15,560 tonnes of carpet backing and 24,719 tonnes of other goods. Export of jute goods during the year ended June 1976 was 452,362 tonnes, consisting of 163,080 tonnes of hessian, 15,714 tonnes of carpet backing and 18,650 tonnes of other manufactures. Sales of raw jute registered for export in July and August this year were 1,000 bales compared to 1,000 bales for the similar months of 1975. The 1976-77 season opened with the carry-over export sales of nearly 1,000 bales from the pre-

vious season. According to the Calcutta Jute Fabrics Shippers' Association, foreign buyers generally preferred Bangladesh goods because they were much cheaper both on f.o.b. and c & f basis.

The *Jute Chronicle*, issued by the Indian Jute Mills' Association, said in its issue for September/October 1976: "If the jute industry is running deep into the morass, this is mainly because even at this hour the first things are not being done first. Priorities over jute seem to have gone all wrong. It is vaguely realised that eastern India, especially West Bengal, cannot do without its jute industry, but the dreadful reality that much of what is now taken for granted in the state will go if the jute industry is allowed to wither away, has apparently not registered in the quarters where it should. As a result,

peripheral issues are receiving more attention than the heart of the problem". The journal added, "The industry's output, despite some curtailment, does not sell, and unsold stocks continue to mount. As funds dry up in the process, more of the weaker units down their shutters, more workers become unemployed, and the outlet for raw jute shrinks further. There is then more of the familiar noise, but nothing is done to eradicate the cause of the malady. The industry must be put in funds sufficient to buy raw jute and meet statutory obligations. Funds could be generated only by creating conditions conducive to the marketing of the present large inventory of goods at a fair price. Distress sales of jute manufactures, currently ruining many mills, would ultimately hurt customers by giving jute a scarcity value".

These extracts indicate that,

despite government's efforts, the jute industry's prospects are far from encouraging.

Even the government of West Bengal does not seem to be very keen in providing some relief to the industry by removing the multi-point sales tax. It is estimated that in the last ten years the jute industry has directly paid to the national exchequer Rs 200 crores by way of export duty and Rs 240 crores excise duty. Its annual outturn is about Rs 465 crores. The industry accounts for 30 per cent of the global output and 40 per cent of export. It provides direct employment to 250,000 workers. Besides, several millions of persons depend indirectly on the industry for their livelihood. An industry of such vital importance surely deserves more support and sympathy from the government at the central and the state level.

TABLE VI
Stocks of Jute Goods

Month	Hessian cloth and bags				Sacking cloth and bags			
	1975		1976		1975		1976	
	Mill. metres	000 tonnes	Mill. metres	000 tonnes	Mill. metres	000 tonnes	Mill. metres	000 tonnes
January	148	41	139	41	71	31	126	54
February	149	42	130	39	69	30	99	43
March	157	44	130	39	72	31	83	35
April	163	46	115	34	80	34	79	33
May	160	45	116	34	69	30	108	45
June	150	43	128	37	61	27	139	59
July	170	50	130	38	82	35	171	73
August	190	56	135	41	117	51	196	84
September	209	62			104	46		
October	185	55			128	55		
November	162	48			114	49		
December	139	41			129	56		

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Challenges within the petroleum refining industry

S. Krishnaswami

THE OIL industry has undergone a major upheaval as a result of the ten-fold increase since 1972 in the price of crude oil. In the decade of the 60's, the world oil resources were considered virtually inexhaustible and it was assumed that new discoveries of this important resource will keep ahead of the world demand for petroleum products.

The price at which crude was sold prior to 1973, was so low that it inhibited all efforts to develop alternate sources of energy. In addition to the low cost of petroleum its technological advantages to the consumers helped and as a result petroleum became the leading source of energy worldwide. The phenomenal rate of increase in petroleum consumption made the petroleum-exporting developing countries, particularly the west Asian countries, realise the importance of their main natural depleting resources. Hence, the large increases in the price of crude oil.

temporary disruption

Unfortunately the upheaval resulted in disrupting at least temporarily the world economy. In India, this resulted in the government having to realign its development priorities. Whereas in the past, like most of the developing countries, India had relied heavily on petroleum to supply its

energy needs for industrialisation, the sudden sharp price increase since 1973 has raised a number of challenges; these have to be met and tackled successfully, if the economic growth is to be sustained. In meeting these challenges the oil refining industry has a major role to play.

In spite of the several-fold increase in the consumer price of petroleum products, there has only been a marginal shift in the petroleum share of commercial energy (in coal replacement measure) in 1975-76 as compared to that in 1972-73, the year indicating the peak in petroleum share. The data are given in Table I.

energy projections

Table II gives an indication of the latest energy projections for the period through 1990-91 as predicted by the Fuel Policy Committee in 1974. This was done by using regression models which correlated past levels of energy consumption with past levels of economic activity and verified through end-use approach. The important step, however, is to assign the contribution required from different modes of energy. For this it is necessary to know the technical feasibility of alternate fuel utilisation in various industrial sectors, the capital cost of conversion, the gestation period for increasing production as well as the economics of using the alternate fuels.

On the face of it, it would appear that oil will have to be replaced by other fuels but only studies in depth as noted can really reveal if this indeed is the case. In effect experience the world over seems to indicate that petroleum still appears to be holding its own against alternate sources of energy in spite of steep rise in price. In developing countries like ours, extreme caution will have to be exercised in determining the type and extent of fuel substitution that we adopt.

At present about 60 per cent of our oil requirements are being met by imports. We will have to rely on imported oil for quite some years to come although to a lesser extent, in view of the significant successes in oil exploration.

Projection of petroleum demand should take into consideration the international situation which is far from predictable. If the projected price of crude or the estimated availability or quality should change in future, it may seriously affect the supply demand balance originally planned for.

Refining is a highly capital intensive industry and the lead time needed from planning to bring on-stream any major refinery facility is estimated as five years. As a result, the country will always have some surplus capacity which has generally been found to be more economical on foreign exchange as compared to the alternative of importing product to cover the deficit petroleum.

TABLE I
Share of Energy Sources in Commercial Energy
(In coal replacement measure—Percentage)

	1970-71	1972-73	1975-76
Coal	37	35	37
Oil	50	53	51
Hydel	12	11	11
Nuclear	1	1	1
Total	100	100	100

TABLE II
Energy Requirement
(In million tonnes coal replacement)

	Commercial	Non-commercial
1970-71 (actual)	197	179
1978-79	358	195
1983-84	528	194
1990-91	898	181

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leum products. The quantum of surplus capacity will get aggravated if petroleum product demands fail to materialise as anticipated for a variety of reasons. The uncertainty in forecasting petroleum products demand is reflected in the comparison of the projection by the Fuel Policy Committee and the current assessment (Table III).

The economic utilisation of such surplus assets, should therefore form an important aspect of forward planning. The solutions ultimately lie in pre-arranging with outside international oil companies or with the governments of oil importing countries either for contract refining or for export of surplus products. The key point here is that such moves should be planned in advance rather than on an ad hoc basis. Another factor is to investigate possibility of reducing planning and con-

struction time for setting up refining facilities.

The principal objective of the refining industry is to obtain the maximum benefits from each tonne of crude oil. In our country the petroleum demand is centred round middle distillates comprising essentially kerosene, high speed diesel, light diesel and ATF. It represented 52 per cent of the total petroleum demand in 1975-76 and is expected to be even higher in the future. Compared to such a demand, the hydroskimming yield range from typical middle east crudes is significantly different as noted in Table IV. Thus, it becomes incumbent on the refineries to find ways and means to maximise the high valued middle distillates at the expense of the low valued heavy ends or fuel oils. The process of maximising middle distillates has been successfully implemented by

the Indian refineries by adopting several techniques some of which are noted below:

(a) improvement in primary fractionating efficiency.

(b) Blending optimization.

(c) Production of high viscosity heavy fuels for power plants and other neighbouring industries.

TABLE III
Petroleum Products Demand (Million tonnes)

	Fuel Policy Committee (1974)	Current assessment
1978-79	34.4—30.3	28.6
1983-84	47.7—38.7	37.7
1990-91	77.5—56.9	N.A.

TABLE IV
Pattern of Product Demand (1975-76) Vs. Typical Product
Content from M.E. Crude
(by droskimming)

	Demand		M.E. Crude
	MM. tonnes	Percent	Percent
Light distillate	3.6	16	16
Middle distillate	11.6	52	40
Heavy ends	7.2	32	44
Total	22.4	100	100

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(d) Judicious choice of streams for own fuel.

(e) Maximising asphalt production at selected refineries.

(f) Relaxation of non-critical product specification.

(g) Proper choice of crude type.

(h) Choice of proper secondary processing facilities.

Any effort to improve further the yield of middle distillates is rewarding. An improvement of one per cent in the middle distillate yield can save the country foreign exchange of the order of eight crores of rupees per annum. It is evident that crude throughput will be dictated by the middle distillate demands of the country and it will be economical to import the lower valued furnace oil rather than generate it by processing additional crude. At this stage a word about the secondary processing facilities is in order as the judicious choice of such processes for future will have a very significant influence on the country's economy.

limited facilities

Several secondary processing technologies are available such as hydrocracking, catalytic cracking, coking, visbreaking, etc. Processes employed by the Indian refineries to improve middle distillate yields are noted in Table V. Such facilities at present appear to be somewhat limited in relation to the total crude throughput capacity. Selection of the appropriate processing technology is not easy. Each of the processes had advantages as well as disadvantages. Hydrocracking process is the best technology as far as conversion yield from fuel oil to diesel is concerned — conversion could be as high as 87 per cent by volume — but it requires very high invest-

ment and the operating cost is high.

Yieldwise visbreaker gives the poorest yield of diesels but low investment and its operating cost has been a major factor for its popularity. Coker generates additional diesel but coke is produced as a co-product for which market must be available. This technology has advanced considerably in recent years and may be worth looking at. Diesel yield from catalytic cracker is second to that from a hydrocracker, but it has disadvantage of generating 30 to 40 per cent by volume cracked naphtha as a co-product for which market has to be assured. Catalytic cracker, however, has the additional advantage that it generates 20 to 25 per cent by volume of LPG for which there is a great demand in the country.

in-depth analysis

So an in-depth cost/benefit analysis is required for opting for the right process of improving middle distillate yields, keeping in view the investment, operating cost and product yield vis-a-vis future product supply/demand balance. HPCL is implementing a project for de-bottlenecking its catalytic cracker with a view to realising a better product pattern from the same amount of crude. It may not be always feasible to debottleneck existing facilities in all refineries. But yield and efficiency improvements in an existing unit through debottlenecking techniques constitute one of the major challenges to the refining technologist.

The type of crudes to be processed very largely influences the critical parameters in the design of a refinery. This does not imply that a refinery cannot handle crude

other than that for which it is designed. But if the crude characteristics change, the refinery is immediately faced with a host of challenges to revamp its unit to meet the new conditions. A case in point is the problem faced by existing refineries to process the recently discovered indigenous Bombay High (BH) crude oil. The properties of this crude are appreciably different from those of a typical imported crude from the Persian Gulf such as Iranian Light as noted in Table VI. BH crude has a high pour point. Hence receiving, storing and pumping facilities and procedures have to be modified to prevent this crude from freez-

ing up under ambient conditions. This requires flushing of crude receiving lines and headers from tanker terminal to the refinery, provision of heating coils and mixers in storage tanks and steam tracing of heavy product lines. Secondly, BH has a significantly higher light ends and middle distillate content and as a consequence the operating parameters on the primary crude distillation unit have to be recalculated. For example studies at Bharat Refinery Ltd. (BRL) where BH crude has been scheduled for processing, revealed that the crude throughput capacity of the unit drops down to about 4.6 MM tonnes/year from its

TABLE V
Secondary Processing Adopted by Refineries in India
(For generating additional middle distillates)

Existing		
Bombay—HPCL/BRL	—	Catalytic Cracker
Cochin	—	Visbreaker
Madras	—	Visbreaker
Visakhapatnam	—	Catalytic Cracker
Haldia	—	Visbreaker
Digboi	—	Coker
Gauhati	—	Coker
Barauni	—	Coker
Planned		
Koyali	—	Visbreaker/Catalytic Cracker
Mathura	—	Visbreaker/Catalytic Cracker
Bongaigaon	—	Coker
HPC	—	Cat Cracker Expansion

TABLE VI
Comparative Properties of Crudes

	Bombay High typical	Imported Iranian light
General Properties		
°API	40	34.3
Sulphur, Wt. %	0.15	1.3
Pour Point °C	30	—21
Salt Content, pounds per 1000 bbls.	10	5
Product Content, Wt %		
Light Distillates	19	16
Middle Distillates	48	40
Heavy Ends	33	44

potential capacity of six MM tonnes/year on imported crude for which the unit was designed. BH crude furthermore will not yield any asphalt thereby idling the asphalt manufacturing facilities at BRL. Also because of its high wax content for all practical purposes BH crude gives no acceptable lube base stock. Hence if this crude is required to be processed at refineries having lube plants (HPCL, MRL and Haldia) segregated processing facilities will have to be provided.

excellent feedstock

Another important point of difference in BH crude is that it yields about 33 per cent of high pour, low sulphur heavy bottoms stock (LSHS) which requires special facilities if this stock is to be used either within the refinery as own fuel or by industrial customers normally using conventional furnace oil. This stock also gives excellent feed stock for some secondary conversion units. Hence maximum advantage from BH crude necessitates that the refinery which processes it must have secondary conversion units.

The economical disposal of LSHS therefore poses another challenge to the refinery. Burning LSHS in power houses or by special industrial customers should only be considered in the short range until such time as facilities for better utilisation are in operation. An interesting point to note is that some of the problems of processing neat BH crude noted above could be overcome if the imported and BH crude or their intermediate streams are blended. The imported crudes have relatively high sulphur and low pour whereas BH has exactly the reverse properties. Such con-

current processing results in appreciable improvement in the product mix. Much work has been done in this direction and an integrated operation between HPC refinery processing imported crude and BRL processing BH crude is presently under active consideration.

The reprocessing of some of Koyali LSHS at HPC refinery is another example of such operation.

One of the main advantages of 100 per cent of the petroleum industry being in the public sector is that the entire industry output can be cen-

trally coordinated for optimum results. Refinery operating plans can be integrated to meet the national objective of meeting product demand at minimum cost. As the focus point of the product generation, the refineries have a very important role to play in the

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respect. At present there are 10 operating refineries and two under construction. (Table VII).

TABLE VII
Crude Throughput Capacity of Refineries in India
(Million tonnes/year)

Operating	
Bombay	
—HPC	3.50
—BRL	5.75
Cochin	3.00
Madras	2.65
Visakapatnam	1.55
Haldia	2.50
Digboi	0.53
Gauhati	0.80
Barauni	3.00
Koyali	4.30
<hr/>	
Sub-total	27.58
Under Construction	
Bongaigaon	1.00
Koyali (expansion)	3.00
Mathura	6.00
<hr/>	
Total	37.58

In our country the petroleum demand pattern differs appreciably from region to region. Generally speaking each refinery should fully meet only the product demand of the region within which it operates. But this is rarely the case and usually there are regional shortages and surpluses of products resulting in in-flow and out-flow of products to and from the region. It is under these circumstances that an integrated refinery production plan becomes vital wherein each refinery is specified to manufacture the product range, giving proper cognisance to the optimum operating plan within a refinery as well as transportation logistic economics. Under such circumstances it is not inconceivable that a refinery may be asked to generate a product pattern which may not be ideal for a particular refinery, but

optimum from the country's viewpoint. If such is the case necessary corrective measures may have to be taken to match optimum operation with logistic considerations. This leads to the important issue of optimising crude allocation (type and quantity) to the various refineries. This option of course does not exist for some inland refineries operating on local onshore crudes. But a fair degree of flexibility in crude type changes is feasible at coastal refineries processing imported crudes. An integrated plan for crude allocation will also enhance optimization of refining facilities.

ideal tools

Operation Research Techniques using high speed computers are ideal tools for preparation of integrated operating plans and for carrying out economic crudes allocation studies. Action in this direction has been initiated and such studies are being undertaken.

Investment and operating decisions in petroleum refining have significant inter-relation with investment decisions of industries such as fertilisers and petrochemicals which utilise petroleum fractions as feed stock. Interdependence between these sectors is so vital that decisions on any of these cannot be taken in isolation. Nitrogenous fertilisers require ammonia as the major intermediate product. Ammonia can be produced from various feed stocks such as natural gas, associated gas (generated with crude oil production) coke oven gas, naphtha, fuel oil, coal and water (electrolysis). The selection of feed stock for fertilizer production depends not only on its estimated long range availability but also on the relative

investment and operating cost of the units based on such feed stocks. The most desirable feed stocks are natural gas or associated gas followed by naphtha and furnace oil with coal being used only if no other feed stock is available.

It should be recognised that production of naphtha or furnace oil is basically dictated by the need to meet the middle distillate production targets. Hence the refinery has no control unless a conscious decision is taken to become sub-optimum and produce these feed stocks at the expense of middle distillates. The production of furnace oil is also intimately related to bitumen manufacturing requirements to meet demands.

High naphtha and associated gas availability from Bombay High crude are significant in the context of planning fertilizer feed stocks in the long

run. With this in view, feed stock for IFFCO's Phulphur fertilizer plant, currently under construction, has already been changed from originally planned furnace oil to naphtha. Also the FCIL's Trombay fifth fertilizer plant presently under construction is based on associated gas from Bombay High. Further, naphtha from Bombay High crude is rich in aromatics. Advantage should be taken to manufacture the aromatic base stocks such as Benzene, Toluene and Xylene from this naphtha.

Planning of fuel for thermal power plants is also inter-related with petroleum industry. Secondary processing units in refineries can minimise heavy ends production but cannot eliminate them altogether. Unless a consumer can be found for this heavy stock, it has to be converted to furnace oil after blending with middle distillates, reduc-

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ing the net middle distillates yield from the refinery. This should therefore be borne in mind while deciding on disposition of refinery streams. The ready outlet for this heavy stock could be the power plants. So in our overall scheme of substituting oil with coal, due weightage has to be given to this aspect as well.

No less important are the peripheral activities which the refinery personnel are constantly involved in and which in the present context of high cost of energy and rapid industrialisation has assumed top priority for our country.

The petroleum industry, particularly the manufacturing side, cannot thrive without a strong technological base. The challenge now facing the refineries is to fill the gap created in the research and development field in the absence of foreign collaboration. Although India is fortunate in

having some institutes and R&D centres specialising in petroleum sciences, in future such activities will have to be intensified and aligned more towards meeting the immediate technological needs of any particular refinery.

Large multinational oil companies have R&D budget running into millions of dollars. This is justifiable since the benefits accruing from any research project is realisable by literally hundreds of refineries and other oil installations throughout the world. In India the petroleum base is only a fraction of this figure and for obvious reasons the objectives of any technological centre and the type of research carried out needs to be less sophisticated and more attuned to local conditions. Very briefly the R&D objectives may be envisaged to be as follows:

(a) Development of new

processes: This involves considerable financial outlay and long gestation period. Here a via media may have to be followed, i.e. buy sophisticated technology abroad to meet immediate needs and carry out modification and developments on these to suit local conditions and achieve long term gain.

(b) Waste Utilisation: the above should not preclude development of simple processes for the dual purpose of economic utilization of waste streams from refineries, at the same time achieving pollution reduction.

(c) Evolving debottlenecking techniques toward better product distribution or economies in operation.

(d) Process, mechanical and metallurgical problems with an aim to minimise maintenance and operating problems in a refinery.

(e) Information exchange,

technical activities and development of data bank. As the petroleum industry is in the public sector a free exchange of technical information and avoidance of duplication of efforts becomes a mandatory function.

(f) Product application research is an area which needs to be followed with vigour to meet the ever changing specialised requirements of petroleum products.

The above is by no means an exhaustive list of R & D functions but have been only noted to bring out the changing role of R & D due to the sudden stoppage of availability of sophisticated foreign technology.

Energy conservation has become a way of life to the refining technologist not only due to the high cost of energy but also because of the urgency of conserving a fast depleting natural energy source. Whereas

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in the past it was difficult to justify a saving in energy equivalent to a few hundred barrels of oil, now the quantum needed for justification has dropped almost ten fold. As a result, the refiner is now faced with innumerable challenges in the area of energy conservation. In effect by virtue of his training he is in a position to advise other industries on this aspect and thus help the national goal by reducing the overall consumption of petroleum demand.

Whereas enumerating specific areas of energy conservation are too numerous and will serve no useful purpose here, it might be worthwhile commenting on one such area, viz. the area of low level heat recovery, as it is important from a national consideration. Integrated captive power plant is an example of such low level heat recovery and is applicable on an industrywise basis. Whereas the overall efficiency

of a typical thermal power plant is at best about 35 per cent (most of the heat being lost to water in condensation) if the let down steam is utilised for process purposes the overall energy utilisation improves to about 80 per cent. This concept is being reviewed for the Trombay industrial complex and represents the type of thinking which can result in enormous economic impact on the energy front. Another example is the substitution of trucking of petroleum products by pipeline transfers such as transfer of ATF from the Bombay Refineries to the Santa Cruz airport or the movement of major fuel products from refinery to Pune by pipelines.

As indicated earlier there are innumerable areas where energy savings can be effected; each one may not contribute much but together they can bring about significant reduction in petroleum usage. For

example, even a 10 per cent overall reduction in refinery fuel/loss can realise a savings of at least Rs 7 crores per year in foreign exchange. Therein lies the challenge.

Last but not the least of the challenges is the commitment of the refinery's personnel to maintain their environment free of pollution. The solution to this problem is as difficult as it is complex. In this context the role of the refiner is not only to technically suggest ways of minimising pollution from his particular plant but must actively participate in assisting the national pollution control organisations in monitoring, interpreting, goal setting implementation and such other associated activities. The major problem is on deciding how clean is "clean" and secondly establishing an equitable way of sharing the pollution burden between various polluters in an industrial complex.

Establishing the degree of environmental control necessitates a complex cost-benefit analysis and for a debatable subject like environmental conservation, to properly allocate the scarce financial resource between marginal pollution control facilities and additional social benefits like hospitals, parks, etc. is indeed a challenging problem.

To approach the problem on a realistic basis will require the understanding and co-operation of a broad spectrum of people—government, industrialists, scientists, engineers, academicians and the general public.

There is no doubt that sooner than later we will have to come to grips with [the problems of environmental pollution with rapidly rising industrialisation and the refineries with their specialised knowledge of combustion control are poised to play a leading role.

COCHIN—QUEEN OF THE ARABIAN SEA

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Yes, Cochin has a tradition spanning over six centuries. And in 1936 she became a Major Port. She has grown to be the Gateway to South-West India.

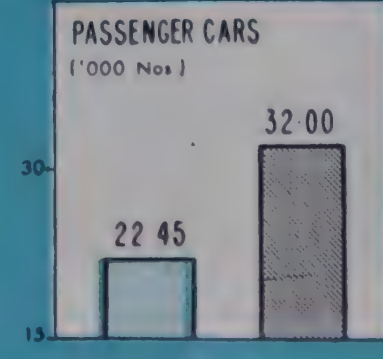
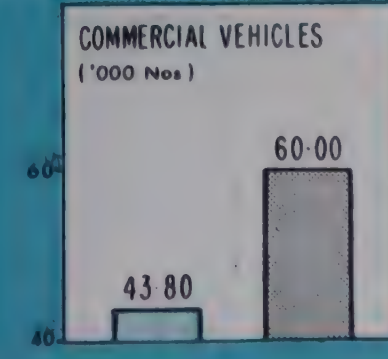
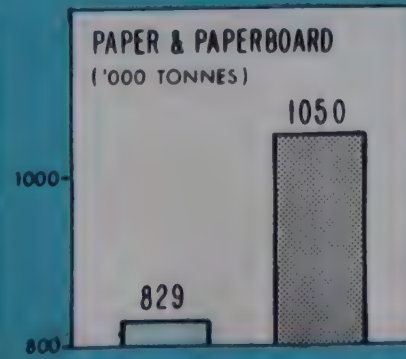
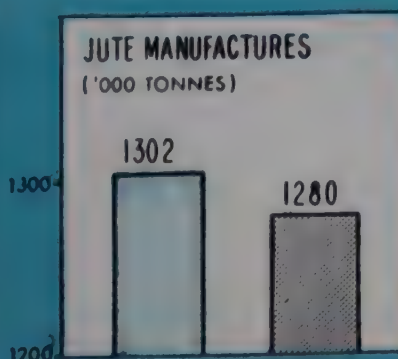
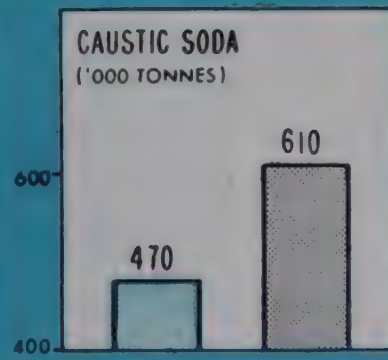
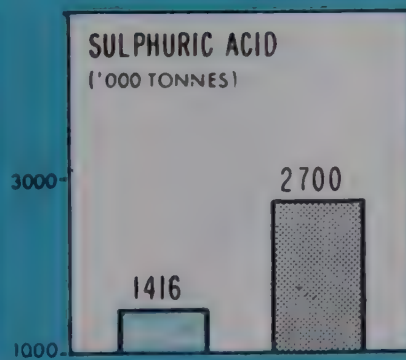
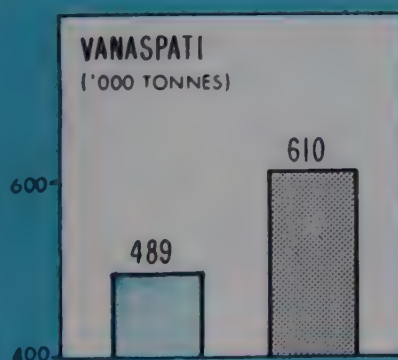
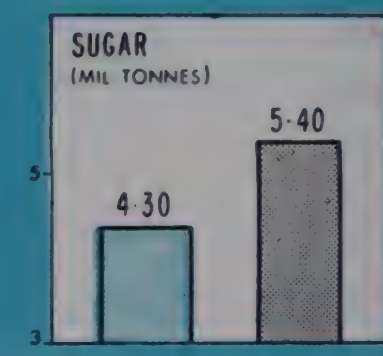
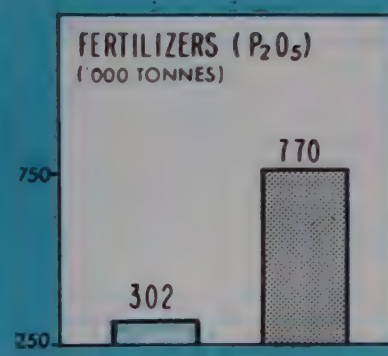
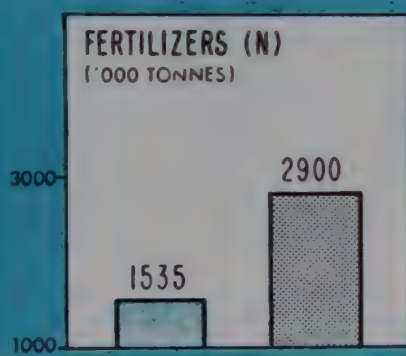
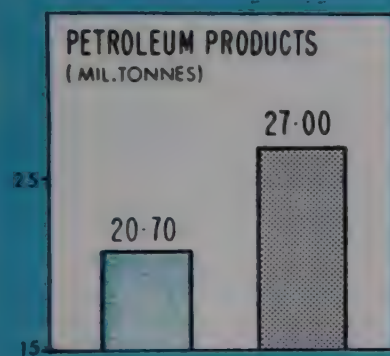
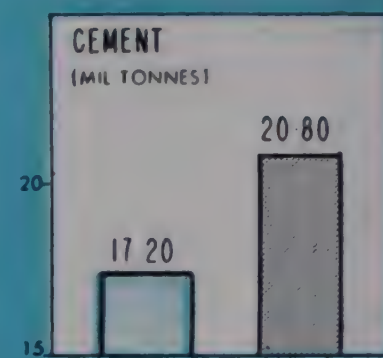
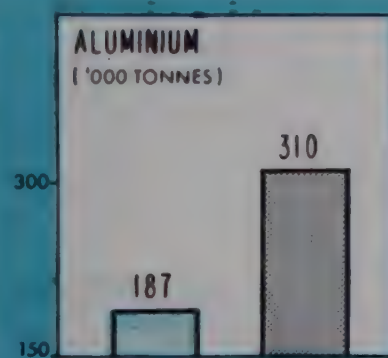
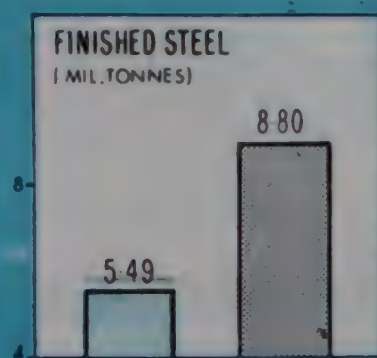
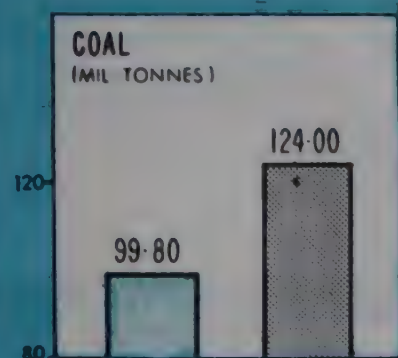
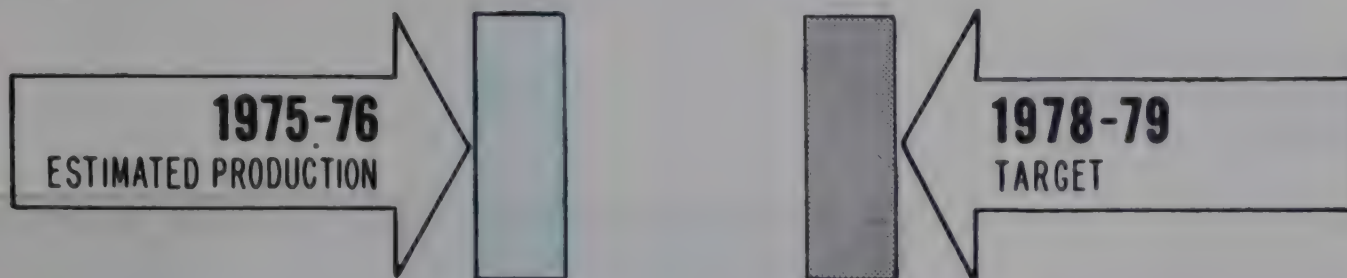
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SELECTED INDUSTRIES : TARGETS FOR 1978-79

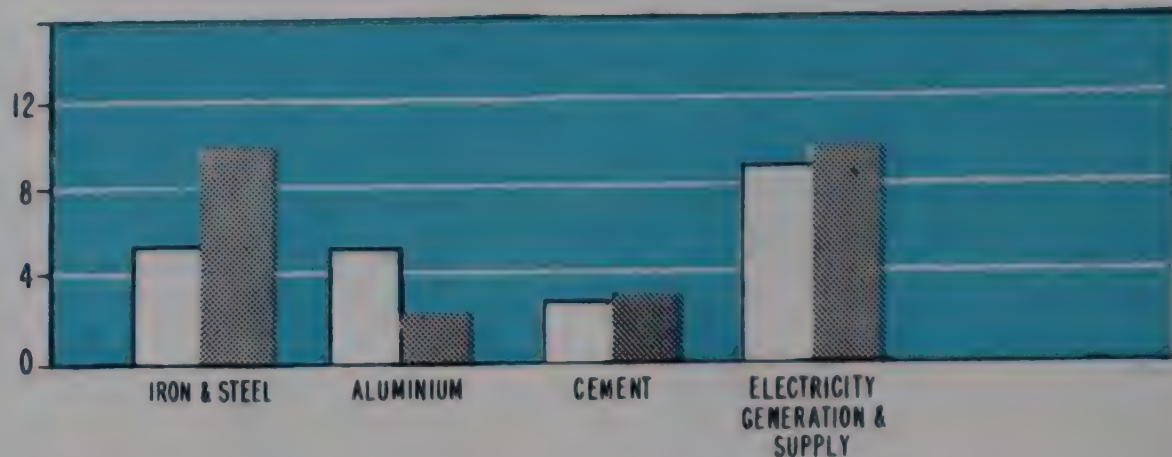




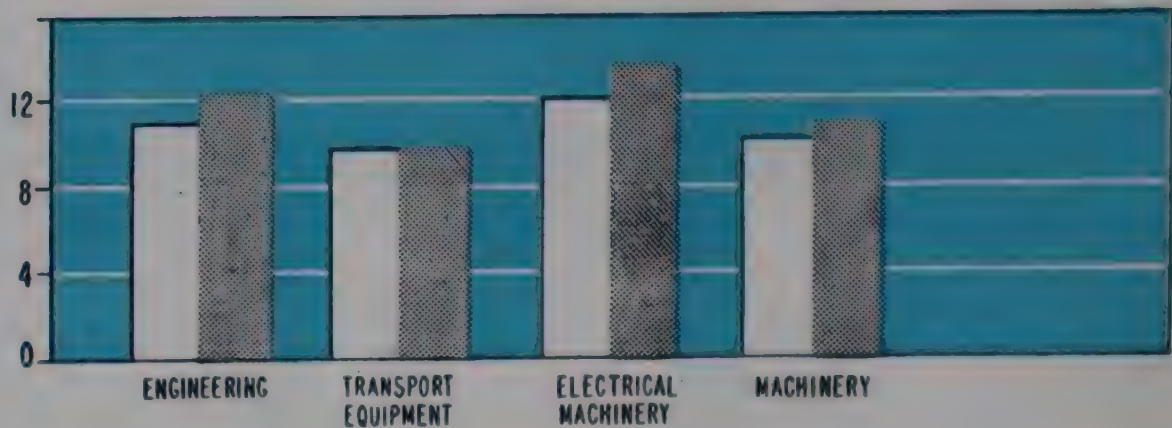
PROFITABILITY IN INDUSTRY

(GROSS PROFITS AS PERCENTAGE OF TOTAL NET ASSETS IN 1973-74 & 1974-75)

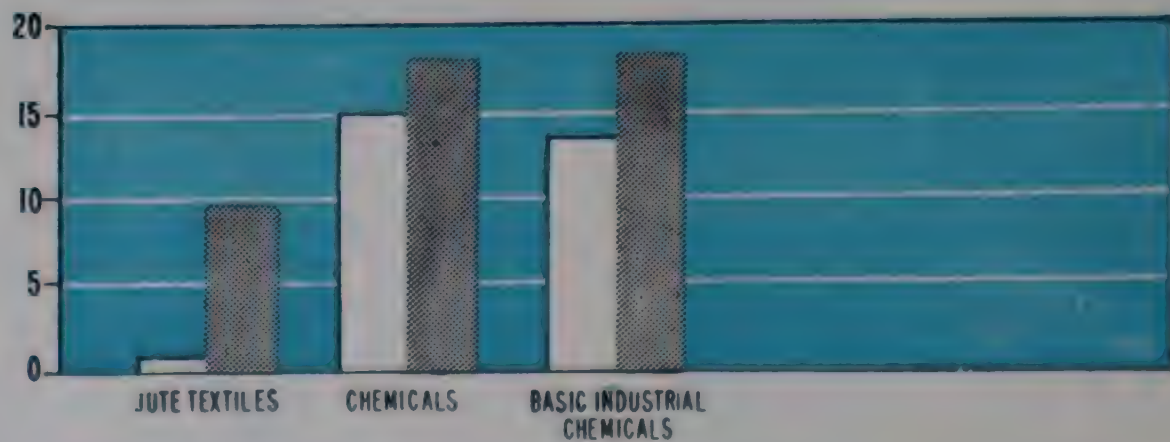
BASIC INDUSTRIES



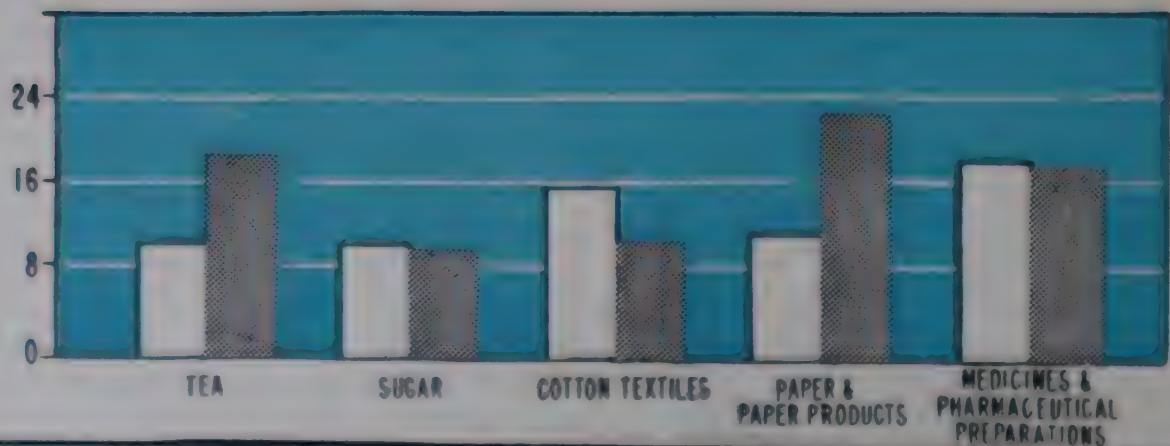
CAPITAL GOODS INDUSTRIES



INTERMEDIATE GOODS INDUSTRIES



CONSUMER GOODS INDUSTRIES



Tyre industry in the grip of recession

Anil Basu

THE AUTOMOTIVE tyre industry is going through a period of demand recession. Whereas the industry's installed capacity has shot up to eight million tyres and tubes, the total production is not likely to exceed 5.5 million units in 1976. This gap will further widen as three more factories go into full production in 1977-78 and some more existing units expand their capacities which were licenced some time back. The production of automobile tyres is not likely to exceed the 1975 production level at 5.5 million tyres, thus registering a negative growth for the first time in the last fifteen years.

difficult period

The demand of tyres is dependent on the growth of the automobile industry. Since November 1973, immediately after the international oil price increase, the automobile industry has been going through a very difficult period. Almost three times increase in the price of motor spirit, caused substantial reduction in the usage of passenger cars. A large number of taxis went out of business as they could not find customers ready to pay the increased fare. Very discretionary use of automobile led to a sharp fall in demand for passenger car tyres. However, the real decline came from taxi owners who account for a large percentage of motor car tyre sales. On the other hand, the demand for new cars declined and

consequently the demand for new tyres.

After three years of price increase in petrol, the demand for new automobiles is again rising and car production has shown a healthy trend. However, for a large country such as ours the demand for cars is still insignificant. And one does not see any great upsurge in automobile demand, nor any move for extra production capacity.

unfortunate situation

It is indeed very unfortunate that in a large country like India, with its vast network of industries located in about 100 cities and towns, the total car population is only 600,000. Automobile population is indeed the measure of a country's progress. Automobile is not a luxury. If a proper census is taken and a survey is conducted regarding its usage it will most certainly reveal that only a small portion of an automobile's time is spent in private transportation.

A great number of automobiles, and almost 80 per cent of this usage factor is devoted to economic activity. Automobile usage speeds up the progress of industry, business and commerce. Increased usage of automobiles for our administration will bring about faster progress in our economic activity, quicker return on our limited capital resources and better implementation of our five-year Plans. Whether it is better distribution of seeds and fertilisers to farmers or speedier communication of the family planning

message, the use of motor cars and motorised personnel would hasten the pace of operation.

Perhaps the time has come when we should re-examine our automobile policy. We are no longer an under-developed country. We must use our technical manpower more intensively; and their mobility is essential for our progress. Public transportation system as we have in India today cannot be the answer. We need more personalised motor transport for our technical men, government administrative personnel and other productive men whose precious time cannot be lost waiting for transportation in order to reach their destination. The motor car is not a rich man's toy—it is a symbol of progress. It is an economic necessity.

largest consumers

However, in the tyre industry the bulk of production is for heavy duty truck tyres. The truck and bus transportation account for large volume so much so that the new tyre manufacturers have installed over 70 per cent of their capacity for giant truck and bus tyres. India's total truck and bus population is nearly 500,000 of which buses account for 50,000. Truck operators are therefore the largest customers of giant tyres.

No less than eighty per cent of the trucks in India are owned by single operators. Truck transportation is a big industry in this country. It provides direct employment to six million persons, livelihood

for 30 million, and contributes Rs 1,100 crores to the national exchequer in the form of excise duty and other forms of indirect and direct taxes. It is estimated that this revenue would amount to Rs 6,000 crores during the fifth five-year Plan period.

useful service

Truck transportation links India's rural areas with the urban centres thereby providing a very useful service to our national economic development. And yet, strangely enough the road transportation industry is suffering from recession. According to knowledgeable sources at a given time some 30 per cent of trucks are lying idle due to lack of business.

It seems strange that at a time when the country's economy is booming, industrial production is going up at a healthy rate, agriculture showing signs of all-round development, road transport should suffer and crores of rupees invested in trucks should remain unproductive. Perhaps the reason lies in uneconomic operating costs of road transportation vis-a-vis other forms of transportation, namely, the railways, water transport and slow-moving bullock carts. Since the proclamation of emergency the railway operation has vastly improved. The wagon availability is no longer a problem—in fact the railways carried over 116 million tonnes of revenue earning traffic from April-October 1976—8.58 million tonnes more than in the corresponding period last year.

An average truck operator

Mr Anil Basu is manager, Public Relations, Goodyear India Ltd.

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heavily taxed and he finds it possible to compete with the all organised railway system which is again heavily subsidised. When he buys a vehicle, the tax component of his purchase price is considerable. A truck tyre is not a luxury item and yet he has to pay 55 per cent excise duty on it, plus 10 to 13 per cent as sales tax depending on the state he is buying from. His cost of operation is equally high. The price of high speed diesel which he consumes in huge quantities is again loaded with 7 per cent excise duty on its refinery price.

check-post delays

What worries the truck operator most is the loss suffered due to inordinate waiting at the octroi check posts. It has been recognised by people at the highest level of the government that octroi posts are undesirable, and yet they continue to add to the national loss in down-time of valuable transport equipment. Some state governments have already taken the lead and abolished octroi altogether. It is hoped that others will follow their example.

Another major obstacle in the economic operation of trucks is the restriction on free movement. Although India is one country, and our policy is shaped towards national integration, most trucks are not permitted to go beyond their state borders. Under prime minister's 20-point programme the states have been asked to release national permits for free movement to 5000 trucks. But to the best of my knowledge, not all states have released their quota of permits even 18 months after the initiation of the 20-point programme.

Road transportation not

only creates direct employment but also creates additional employment opportunities in the rural areas in the shape of repair garages, overnight stops, service stations and eating houses. According to a study conducted by the National Council of Applied Economic Research (NCAER), each crore of rupees spent on road building provides jobs for 11,871 people, and when roads are used additional 4,100 jobs are created for operating and service personnel for commercial vehicles. In fact, road transportation quickens up the tempo of rural development by providing fast means of communication from rural production centres to city markets and vice versa, thereby providing better price for agricultural products and cutting down wastage in perishable goods.

valuable service

The truck operator should be looked upon as an entrepreneur providing valuable economic service to the country. He needs all support and sympathy which our government is bestowing upon small-scale industries. To start with he must be given relief in the prices of high speed diesel and truck tyres—these two items alone comprise the largest percentage of his operating costs. Secondly the tax component of a new truck should be scaled down, and he should be given facilities of hire-purchase at low interest rates.

The government should be commended for giving 25 per cent excise duty relief to increased production of tyres achieved beyond a base year. However, this relief will be mostly available to new production units to the great disadvantage of old manufacturers. The truck operator

has no brand loyalty and he will buy any brand that is cheaper in the market, provided it is not of inferior quality. To be of real benefit to truck operators the relief of 25 per cent excise duty should be given to all producers so that all truck operators can enjoy the benefit of the reduced excise duty.

Tyre manufacturers are making a strong bid to increase their sales in the export markets. And it is estimated that the total exports in 1976-77 will be about Rs 18 crores. However, this is only a small part of the total production. Any spectacular further rise in tyre exports is not likely as most overseas countries are setting up their own capacities of tyre manufacturing. And in terms of price, Indian tyres cannot compete with some overseas manufacturers. However, most of our tyre exports have been made at a loss.

With the country's foreign exchange reserve rising it is questionable whether the country could push up tyre exports even at a loss. In this respect the Finance minister's recent observation discouraging exports at a loss is significant.

With more automotive tyre projects which are in different stages of implementation the installed capacity will continue to rise year after year. Taking a long term view of the industry's prospects, one can only hope that a growth-oriented country will create additional demands and full industry capacity could be utilized in a matter of five to seven year's time. Greater stress on massive house building and road construction projects, which are now under active consideration of the government would certainly help in the expansion of road transportation industry in the near future.

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Victims of neglect

S. P. Chopra

Ever since the beginning of the planning era in this country, the consumer goods industries have been victims of indifference. According to the sectoral analysis of industrial production made by the Reserve Bank of India, the pace of annual advance of consumer goods industries since 1960 was less than one-fourth of that of the basic industries. While the output of consumer goods industries rose by only 58 per cent in 16 years from 1960 to 1976, the corresponding increase in basic industries was as much as 244 per cent during the same period. Granted that the base of the basic industries was rather narrow in 1960 but the sharp differences in the rates of growth of the two groups of industries did operate unfavourably for the consumer goods industries.

modest show

Almost the same pattern of performance was witnessed in 1976. While production of basic industries rose by more than 16 per cent in 1976 over 1975, the consumer goods industries put up a modest show at an increase of three per cent only even though there was a decline of the order of 0.8 per cent in 1975 over 1974. The thrust of investments being in basic and capital goods industries, and to a certain extent in intermediate goods industries, it was no wonder that shortages of consumer goods were experienced from time to time.

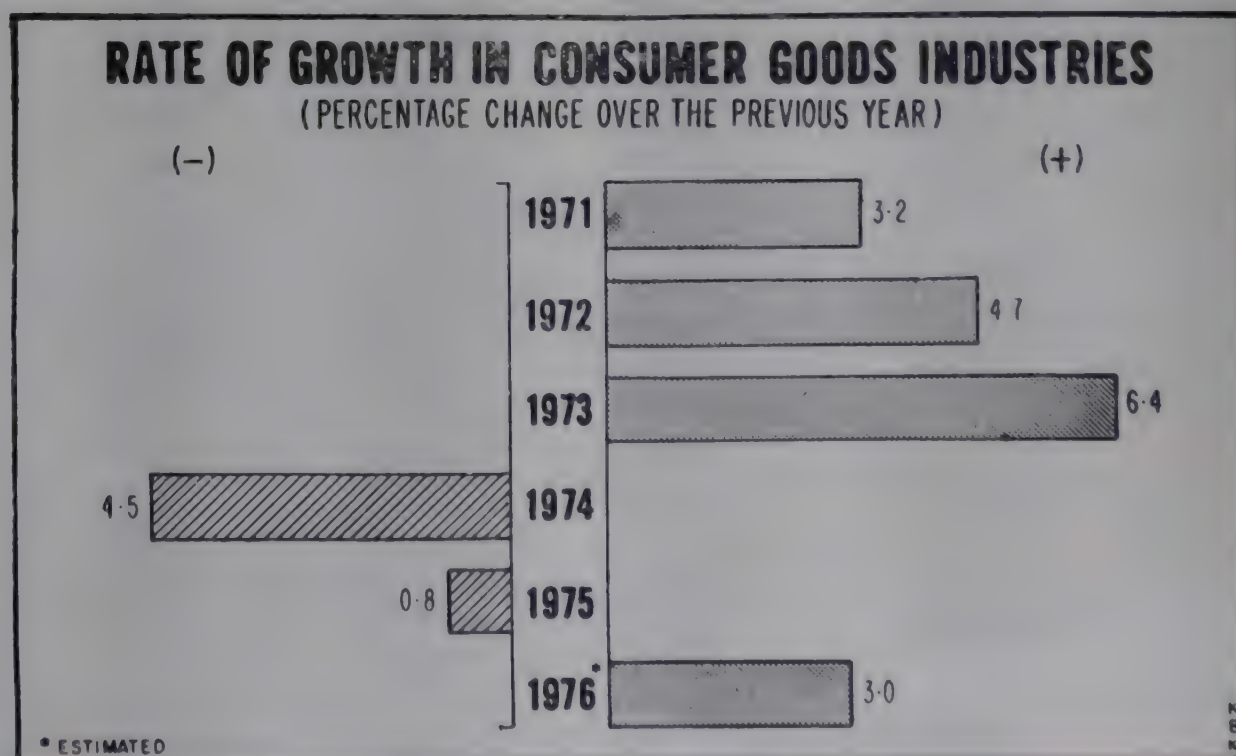
The cotton textile industry is the leader among consumer goods industries whose fortunes have been hit by inflation in costs. The rising prices of cotton and other inputs have increased the prices of cotton textiles where the consumer resistance is being felt in a big way. Consequently, the total production of cotton cloth improved by nearly one per cent in 1976 over 1975.

Increasingly, the cotton textile mills have been becoming sick and under the circumstances the government is left with no option but to take them over. The policy of forcing the textile mills to sell controlled cloth at a loss has been a major factor responsible for increasing sickness. In some cases inept and inefficient management may have been responsible for the sickness of the units. What is needed is a clear-cut policy to prevent further sickness in this industry.

The sugar industry recorded a fall of nearly 10 per cent in production in 1976. The internal supply of sugar was, however, maintained by reducing exports from 600,000 tonnes to 450,000 tonnes. The fact of the matter was that this industry had continued to increase its output year after year after the initiation of partial control. The formula of making available 65 per cent of the output of this industry for distribution at controlled, low prices through the ration shops has proved highly successful because the losses incurred due to this commitment are made good by disposing of

the remaining 35 per cent of output at free market prices. The outlook for the current season which started on October 1, 1976, seems good because the government has introduced a number of measures to maximise the output of sugar. Through the mechanism of orderly releases of free sugar, the government can certainly restrain upward movement of prices though the cooperation of industry and trade is vital in this regard.

The other major industries which fared badly in 1976 were salt, leather footwear (western type), rubber footwear, soap and razor blades. In the case of footwear, the drop in production was a reaction to the sharp increases in prices which had taken place. Undoubtedly, the costs of raw materials had increased sizeably but the sale prices of footwear had been raised so steeply that the middle class families had started feeling the pinch. Also, during the last two years, the commitments of this country in respect of exports—especially uppers—had increased considerably and that factor also had been responsible for raising



the prices of shoes. In the case of razor blades, there was an obvious excess capacity installed in this country. Because the quality of indigenous blades had improved recently, the use of smuggled blades had been considerably reduced but the size of the domestic demand was lower than the available capacity; hence the decline in output in 1976.

As against the industries mentioned above which experienced a drop in production in 1976, there were others which improved their production. Included in this list were tea, vanaspati, infant milk food, cigarettes, paper and

paper-boards, electric fans, fluorescent tubes and motor cycles. In the case of infant milk food and vanaspati, the rise in output was less than what the market needed and hence reports of shortages were received from some parts of the country. The problem of vanaspati and other edible oils is currently being solved by increasing the import of oilseeds from abroad. Perhaps it will be advisable to create some buffer stocks of oilseeds if vast fluctuations in oil prices are to be avoided. With the foreign exchange position being comfortable, it would not be difficult to maintain stocks of essential oilseeds.

The pressure on the consumer goods prices keeps on rising also because of the continued expansion in money supply but the sharp upturn in prices in recent months has been witnessed in particular fields due to sectoral imbalances. This problem should be tackled by increasing the supply of goods which are under pressure instead of creating tight money conditions which tend to generate disequilibrium in a host of consumer goods industries. The aim of increasing output of consumer goods at stable prices cannot be achieved by taking measures which generate recessionary tendencies in the economy.

Production in Consumer Goods Industries

Industry	Weight (1970=100)	Unit	Production during					Percentage Change		
			1971-72	1972-73	1973-74	1974-75	1975-76 (Prov.)	1973-74 1972-73	1974-75 1973-74	1975-76 1974-75
Sugar	2.7900	Th. Tonnes	3452	3639	3744	4642	4645	+2.9	+24.0	+0.1
Tea	2.5718	Mill. Kgs.	431	456	468	494	482	+2.6	+5.6	-2.4
Flour Milling	0.8000	Th. Tonnes	2612	2723	1819	1698	1638	-33.2	-6.7	-3.5
Vanaspati	0.6700	"	590	578	449	353	489	-22.3	-21.4	+38.5
Infant Milk Food	0.3300	"	17.7	20.6	14.6	15.7	22.3	-29.1	+7.5	+42.0
Biscuits	0.3100	"	64.9	69.8	68.7	60.3	58.7	-1.6	-12.2	-2.7
Salt	0.2066	"	5745	6781	6311	6027	5339	-6.9	-4.5	-11.4
Beer	0.6900	Mill. Ltrs.	38.6	53.5	60.5	60.4	49.6	+13.1	-0.2	-17.9
Cigarettes	2.2100	Bill. Pcs.	67.3	60.8	65.7	63.7	61.3	+8.1	-3.0	-3.8
Cotton Cloth (Mill Sector)	5.3407	Mill. Mtrs.	4039	4224	4084	4450	4020	-3.3	+9.0	-9.4
Cotton Cloth (Decentralised)	0.0688	Mill. Mtrs.	3510	3694	3863	3817	4100E	+4.6	-1.2	+7.4
Art Silk Fabrics	1.9198	Mill. Mtrs.	969	918	846	863	875E	-7.8	+2.0	+1.4
Leather Footwear (Western Type)	0.0286	Th. Pairs	8319	7462	7178	7056	8366	-3.8	-1.7	+18.0
Leather Footwear (Indigenous Type)	0.3114	"	7843	6421	7370	6686	7059	+14.8	-9.3	+5.0
Paper & Paper Board	2.1735	Th. Tonnes	801	791	777	836	831	-1.8	+7.6	-0.6
Newsprint	0.0210	"	40.0	40.8	48.7	54.0	52.9	+19.4	+10.9	-2.0
Hard Board	0.0269	"	20.6	24.9	22.9	20.5	15.4	-8.0	-10.5	-24.9
Insulation Board	0.0186	Tonnes	1658	2041	1331	1602	861	-34.8	+20.4	-46.3
Matches	0.2601	Mill. Boxes	4581	4183	4470	4269	3595	+6.9	-4.5	-15.8
Penicillin	1.0765	MMU	237.4	231.0	248.8	250.3	255.1	+7.7	+0.6	+1.9
Streptomycin	1.0829	Tonnes	182.6	192.7	186.4	192.6	185.9	-3.3	+3.3	-3.5
Chloramphenicol	0.3175	"	50.4	42.6	49.1	59.7	62.9	+15.3	+21.6	+5.4
Sulpha Drugs	0.1982	"	1007	1263	1174	1093	1256	-7.0	-6.9	+14.9
Vitamin A	0.1245	MMU	43.5	50.5	49.6	39.3	35.4	-1.8	-20.8	-9.9
Soap	0.6091	Th. Tonnes	279	275	234	226	265	-14.9	-3.4	+17.1
Synthetic Detergents	0.0083	"	57.1	64.8	72.2	82.4	75.1	+11.4	+14.1	-8.9
Tooth Paste	0.0838	Tonnes	4840	6650	7861	5601	4889	+18.2	-28.7	-12.7
Tooth Powder	0.1221	"	454	870	1051	1055	908	+20.8	+0.4	-13.9
Optical Bleaching agents	0.2222	Tonnes	794	783	797	622	606E	+1.8	-22.0	-2.0
Glycerine	0.0373	Th. tonnes	9.5	9.6	8.5	7.5	7.3	-11.5	-11.8	-2.7
Cottonseed Oil	0.2100	"	29.5	55.5	73.3	63.1	54.7	+32.1	-13.9	-13.1

—Contd

Production in Consumer Goods Industries—Contd.

1	2	3	4	5	6	7	8	9	10	11
Typewriters	0.1382	Th. Nos.	45.6	37.5	33.7	48.5	57.2	—10.1	+43.9	+17.9
Room Air-conditioners	0.0138	„	22.7	22.6	27.7	22.5	7.8	+22.6	—18.8	—65.3
Domestic Refrigerators	0.1341	Th. Nos.	86.8	97.7	110.7	106.9	92.3	+13.3	—3.4	—13.7
Sewing Machines	0.0478	Th. Nos.	315.3	336.8	257.4	327.1	264.0	—23.6	+27.1	—19.3
Electric Fans	0.2437	Th. Nos.	2047	2278	2118	2249	2209	—7.0	+6.2	—1.8
Incandescent Filament Lamps	0.2896	Mill. Nos.	113.5	131.3	120.6	134.0	130.1	—8.1	+11.1	+3.1
Fluorescent Lamps	0.0864	„	10.8	12.2	12.7	15.8	17.2	+4.1	+24.4	+8.9
Dry Cells	0.3171	Mill. Nos.	605	629	654	613	516	+4.0	—6.3	—15.8
Radio Receivers	0.9683	Th. Nos.	2013	1657	1765	1949	1543	+6.5	+10.4	—20.8
Cars	0.4936	Th. Nos.	40.6	30.3	44.5	31.4	21.8	+16.2	—29.4	—30.6
Jeeps	0.1448	„	11.2	13.0	12.4	9.6	7.1	—4.6	—22.6	—26.0
Motor Cycles	0.1093	Th. Nos.	44.1	48.0	47.0	61.2	70.1	—2.1	+3.2	+14.5
Scooters	0.1095	„	68.7	68.6	77.0	88.4	112.6	+12.2	+14.8	+27.4
Mopeds/Scooterettes	0.1095	„	15.8	22.9	26.7	31.9	33.6	+16.6	+19.5	+5.3
Bicycles	0.3652	„	1808	2408	2575	2384	2364	+6.9	—7.4	—0.8
Bicycles Spares & Accessories	0.1364	Rs. lakhs	1094	1490	1868	2229	2402	+25.4	+19.3	+7.8
Three-wheelers	0.0296	Th. Nos.	7.3	10.7	11.2	12.2	13.3	+4.7	+8.9	+9.0
Water Meters	0.0566	Th. Nos.	147	120	126	123	130	+5.0	—2.4	+5.7
House Service Meters	0.2093	„	2108	1312	1637	1676	1320	+24.8	+2.4	—21.2
Clocks	0.1300	Th. Nos.	118.7	107.7	140.1	175.5	173.9	+30.1	+25.3	—0.9
Zip Fastners	0.7820	Th. Mtrs.	2876	3314	2748	1606	1503	—17.1	—41.6	—6.4
Pencils	0.1880	Mill. Nos.	59.5	52.5	77.1	73.9	49.0	+46.9	—4.2	—33.7

E = Estimated.

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A survey of selected industries

S. Venu

THE CONSUMER goods industries cover a wide spectrum of industries ranging from sugar to paper and soap. Within the orbit of this article, therefore, it is proposed to cover the problems of representative activities within the sub-areas of durables, semi-durables, food and 'habit' industries.

Television sets : This is among the newest 'durable' industries in India, which made a beginning only in the late '60s. TV first came to Delhi and has subsequently spread to all the four metropolitan cities apart from relay centres in Amritsar, Mussoorie and other towns. By 1984 it should cover most of the country's area.

sporadic demand

Up to 1970 the progress of production and demand was rather sporadic. Since the number of transmission centres was limited, so was the demand for TV sets. Again, the cost and duty structure of TV sets was high, the average price being in the region of Rs 3,500. Demand was elastic in regard to price where there were TV transmissions; it was *stifled or latent* where there were no centres. Production was in the region of 16,000 sets in 1971 which rose to 96,000 sets in 1975.

This production was divided among two dozen units in the private and joint sector, the scale ranging from medium to small-scale. J.K. (Singhania)

among the large houses has entered this line. The public sector unit of the Electronics Corporation of India is also a manufacturer, reputedly the only one with a 'waiting' list. The rest of the production is divided among 20 major manufacturers though licences have been issued to more than 60 companies. Excess capacity prevailed in most units.

changed position

In the last two years, however, the position has changed. Calcutta and Madras arrived on the TV transmission map. Relay centres have been opened in smaller towns. This increased basic demand at the then prevalent prices. In 1976, the duties on varieties the exfactory price of which was below Rs 2,500 were cut by 15 per cent. Manufacturers cut out the ornate frills to reduce costs. The result was that the prices of the medium and small varieties (40 cms screens and below) fell by over 20 per cent. Demand has gone up and the short-run elasticity is around 2.5. Hence, it is expected that 120,000 sets will be produced in 1976.

There are, however, important unresolved policy issues which may affect demand. First, the link-up with Telstar so as to obtain international programmes 'live'. Pakistan, Bangladesh and almost all other Asian countries are on this link-up. The cost is prohibitive but a high quality of programmes may more than compensate the loss. Should this materialize the demand

will burgeon greatly. Again, if 'colour' TV is to become the order of the day, people will hold off the purchase of black and white sets until the former is established.

multi-channel sets

On the assumption of a link-up and the establishment of colour TV, the demand by 1984 was projected for multi-channel sets by a log linear regression model accounting for a 30 per cent price rise between 1977-84 and 12 per cent rise in disposable incomes above Rs 1000 a month. The price elasticity was 1.8 and income elasticity 1.4. Demand is likely to rise at 16 per cent per annum and a production of 200,000 sets with an appropriate mix of colour and black and white is likely. It is significant that income elasticity is *greater* than price elasticity; this is the normal feature during the process of development.

The existing units will need to prepare themselves for a large-scale shift to colour TV in the 1980s.

Scooters: This ubiquitous carrier is the first aspirational target of the person reaching an income of around four figures per month. Economical on fuel consumption, a two or three-seater is easily converted by ingenuity to a four-seater. It is not uncommon to see whole families riding on the pillion and in its vicinity oblivious to the dangers involved.

Even before the oil price hike of October 1973, the production of scooters rose from 13,000

in 1960 to 77,000 in 1973, Vespa and Lambretta being the market leaders. Since then Scooters India, Karnataka Scooters and other units have been licensed, the former being the first public scooter firm to sell shares to the general public, thus being the progenitor of the 'national' sector.

After the oil price rise there was a pronounced demand shift towards scooters and, initially, the already long queues lengthened. However, the recent spurt in production (the 1000,000 mark has been covered in 1975-76) combined with the credit squeeze, compulsory deposit schemes and other measures to combat inflation, dampened the exuberance and, to some extent, reduced supply-demand imbalance.

potential market

The reason for the popularity of the Italian prototypes is that India entered the scooter era just as Italy, with a higher standard of living, was shifting over to cars on a mass scale. Hence the Italian makers saw in India a vast potential market. Today, the technology is indigenous.

Waiting list and 'repressed' demand always vitiate the accuracy of demand projections. Yet, this analysis will proceed on the basis of a balance without a pronounced waiting list though the latter may prevail for a certain brand e.g. as in the area of tyres. 'Ceat' still commands a premium despite the industry being in the dol-

From a Calcuttan

Recently we put out an advertisement. It said (among other things): Come to Calcutta with a crooked camera!

We know, no camera has been invented which can give a true picture of Calcutta. Before focussing your camera, please write to Mr. Bholanath Sen, Chairman of Calcutta Metropolitan Development Authority for a picture in words. Address: Calcutta-700 017.

When I saw the draft advertisement, I was equally curious to know what could be the picture of Calcutta in words, if pictures through camera failed to register them! When we discussed the matter further, all of us present in the room began to feel somewhat warm because the subject we were discussing was Calcutta. A very warming subject indeed!

I was so overwhelmed by the replies, that I thought of writing this open letter.

Where else but in Calcutta will you find a starving young man spending his last rupee to purchase a book of poems which he reads, for effect, at the burning ghat? If you think I am exaggerating I will point out that my statement is a gross understatement. How else can you explain that in this city there are over 5000 theatrical groups? Not that the people here are wealthy and have money and leisure to spare or culture is a luxury to them, but people here have a way of savouring the delights of life even while struggling for livelihood. They are not after the material gains so much. The city does not like affluence.

That explains why we exist, practically without murmur, side by side with such inconveniences as shortage of water, accumulation of garbage, obstruction of pavements and so on. It is this aspect that attracts tourists with crooked camera lenses. They see the filth, they see the poverty, they see the inconveniences but have no time for the artisans who are producing beautiful works of art in the slums of Kumartooli and Kalighat, artists who are rehearsing a theatrical play after back-breaking office duties or as I said before, the poet at the burning ghat.

Am I saying that there are no problems in Calcutta? I do not want to go down in history as the biggest liar this side of the Suez! If there are problems in other cities of the world, they are multiplied several times in this city.

Am I saying that there are no criminals in this city and that people are all lovable? That will be the exaggeration of the year. The city has people of all kinds. Yet, Calcutta is the least criminal city in the world. Why is it so?

As it is, Calcuttans are often accused of being attached to their city sentimentally and emotionally to the point of fault. I do not consider this a fault at all. People should love their city intensely as Calcuttans do. That would give them the strength to survive and would also give the city the strength to flourish. This has been proved in the case of Calcutta.

This, however, is no defence for deficits. There is no reason why a big city should not have good water supply, good drainage, good roads and living conditions. That is what we are trying to do. We are engaged in increasing water supply (we have already increased it from 20 gallons per head per day to 32 gallons), we are laying miles and miles of pipe lines for sewage and storm water disposal, we are building bridges, widening roads and constructing new arterial roads, and also, we are improving the slums.

You must be wondering whether investment alone can save this city. While I don't doubt it, I am more confident

because this investment is coupled with people's love for the city.

We must view the problem of Calcutta not only from the city angle but from the State and national angle. Let Calcutta's development be not at the cost of other places but by its own merits.

At this point, I will make a bold assertion. There is not a single man or woman in the Metropolitan area who has not benefited from the CMDA projects in some way or another, directly, indirectly or very remotely.

For example, five lakh people using the Howrah subway everyday move safely and quickly within the station area.

Nearly 40 lakh people in Calcutta and adjoining areas are getting increased water supply.

Nearly 200 buses and the same number of trams are on the roads because of CMDA investments. These are used by about a million people everyday.

We have set up or renovated over 600 primary schools. One can count the number of students—at least one lakh—who are benefiting from them. Our programme has also meant less waterlogging (which is an economic benefit apart from physical comfort), less disease (which is economic as well as a physical benefit) and speedier travel through widened roads and new bridges (which is an economic benefit too). As a result of our activities, new areas have been opened up all over the metropolitan area and within the next four years, when the Eastern Metropolitan By-Pass (from Dum Dum to Garia) and the Barrackpore-Kalyani Expressway and Kona Expressway are complete, vast areas in our east Calcutta and west Howrah (not to speak of Kalyani) will be developed. I may be guilty of painting a rosy picture of tomorrow, when all you are interested in is a picture of today. I fully sympathise with you. Today's picture is not rosy but how can I ignore tomorrow's picture when we are so certain that because of our activities and because of the help of the people, there will be a noticeable change in the landscape? How can I ignore that within the next five years a section of tube (underground) railway and the second Hooghly bridge will be in position. Are they not improvements which are very much on the screen?

While expressing optimism, I have only one cautious remark to make. There are certain things which cannot be completed overnight, because there are physical difficulties like land acquisition, materials, engineering problems and money. Without being argumentative, can I ask one question?

If it takes nearly a year to build a house, how long should it take to build a township?

Whatever may happen, Calcutta will remain. Because Calcuttans love it. You may ask, who is a Calcuttan? Well, I count you as one because by showing interest in Calcutta, you have become one of us.

It does not matter what language you speak or where you come from. To me and to the nine million, you are one of us even if the population goes up to nine million and one.

We are already thinking of work towns—22 of them. Poorer people will have a better deal there as well as in Calcutta.

B. N. SEN

Chairman,

Calcutta Metropolitan Development Authority

Calcutta-700 017

drums and other brands selling at large discounts.

A rise in the price of petrol has a double-edged effect on the demand for scooters. First, a positive effect by way of a movement from prospective car buyers. This could be new and substitution demand. Second, prospective scooter buyers could shift to public transport. But in view of the relatively marginal impact of rising petrol prices on scooter running costs, the former probably outweighs the latter.

To arrive at a demand forecast, both for new and replacement demand the following assumptions were made:

1. Disposable income will grow at four per cent compound per annum because of restrictions on bonus and anti-inflationary schemes up to 1984. This is against a five per cent rise between 1969-74 and an eight per cent rise in earlier years.

2. (a) The relative price index of scooters vis-a-vis the wholesale price index will be 50 per cent.

- (b) the index will be 55 per cent i.e. it will go up.

projected demand

Projections of wholesale price indices, disposable incomes and relative prices of scooters up to 1984 were made by assuming a 2.5 per cent rise in the food articles index (35 per cent weightage) and a proportionate rise in the prices of other items included in the wholesale price index. Consumer expenditure was based on the NSS sample round of 1971. A 'residual' factor adjusted for random disturbances gave disposable incomes. Using a double logarithmic regression model, the income elasticity of demand was +4.23 and the

price elasticity — .83. These coefficients were significant at one per cent and 15 per cent confidence levels with R^2 values at —92.

Investment demand is more income elastic and less price elastic; replacement demand is elastic on both counts. The final projections ensuing are:

1984 — with constant scooter price — 700,000.

1984 — with five per cent rise — 600,000.

This is higher than the capacity of 400,000 in existence and the policy implication is further expansion of existing units for benefiting from scale economies.

oldest activity

Textiles: The textile industry is probably India's oldest sector or area of activity. In the pre-British era it was the age of handlooms and weaving. The advent of the 'organized' sector almost eradicated the former but there has been a 'come-back' aided by government policy regarding the handloom and unorganised sector.

Basically, therefore, there is a structural dualism; the mills, producing certain varieties of cloth at relatively high prices with capital-intensive methods and the varying grades of producers in the small units and the village and charka units using handlooms and categories of powerlooms. The government's policy is biased in favour of the latter as they provide employment for over three million persons with a high labour-output and low capital-labour ratio i.e. all the advantageous factor endowments. Yet with the export market becoming an important segment, the handloom sector is becoming sub-divided into 'modern' relatively capital-intensive units for sophisti-

cated exports and the traditional production function sector.

The aggregate capital in the industry is about Rs 1200 crores and it has a high weight of 22 in the industrial index (Base: 1960=100). With the rapid growth of chemicals and engineering industries in recent years this weight will have to be revised downwards when fresh indices are constructed. The centralized mill sector employs one million workers: as said earlier the decentralized sector employs about three million and the importance of the industry is thereby highlighted. In addition, at least two million people are engaged in the cultivation of raw cotton.

The many problems and travails of the industry can be recounted only briefly. First, the supply of raw cotton has always been erratic and so has the price level. This has meant varying profit levels for some units. Second, demand has fluctuated due to varying export and domestic demand, both due to the growth of man-made fibres and increasing competition abroad.

sick mills

Third, a number of mills have become 'sick'; in fact, the National Textile Corporation (NTC) is composed almost entirely of the sick mills. This sickness is the result of poor maintenance, obsolete machinery, unscrupulous management with 'siphoning' off of dividends without adequate retentions for replacement of assets.

The percentage ratio of gross profits to gross sales over recent years for the mill sector has been:

1970-71	6.0
1971-72	5.0
1972-73	7.3
1973-74	8.1
1974-75	6.6

The mills got the full benefit of the 1973-74 inflation but overall ratios conceal wide variations among different firms. The marginal profit rise has varied over the period 1970-75 from 120 to 600 per cent apart from the fact that many suffered losses. Basically, the structured feature of the mill sector has been automistic competition and yet with high product differentiation on the part of some mills who have maintained profits — Mafatlal Group, Bombay Dyeing and the like, with specialized lines.

reluctant adherence

Most private mills are reluctantly adhering to the stipulation that a certain quota of controlled cloth should be sold. A large proportion is being produced by the National Textile Corporation (NTC).

It is in the field of ready-made garments that the most spectacular rise in exports has been witnessed — as much as Rs 150 crores in 1975-76. But these apparels largely use handloom material which does not add to the mill demand potential.

In a multiproduct industry price and income elasticities are difficult to estimate and mean little. For a superior shifting variety, however, the values in 1970-75 were .62 and 1.24 respectively; for a popular variety, the values moved in the reverse direction, .82 and 1.14. However, too much should not be read into these figures obtained by regression in a limited segment without cross-elasticity values i.e. substitution of trousers for a shirt and vice versa since they are partially competing products.

The industry will, perforce, continue to face the problems

of fluctuating unit export values, stringent raw cotton supplies, slackness in domestic demand etc. The 'Darwinian' situation will mean the survival of the fittest. The exit of the marginal firm may add to the ranks of the 'sick' and swell the orbit of the NTC.

The decentralized sector is gradually moving to a position of viability helped by the various government agencies such as the Handloom Board in the fields of cooperative production and marketing, revision of designs, credit facilities, concessions in excise duty exemptions and the like. The accelerated growth of readymade garments exports, concessions in importing countries on quotas and tariffs and the demand for tourist purchases in the country are positive factors. The economic historian of the '80s will find a lot

of 'meat' in the progress of this sector.

Cigarettes: The cigarette industry in India has two basic features. First, it is the second largest contributor to the national exchequer of excise duties (which were as high as Rs 360 crores in 1975-76) although it uses only 25 per cent of the tobacco cleared for consumption in all forms — bidis, hookah, chewing, snuff, cigars and cheroots and stalks being the others. Thus, it bears a disproportionately high burden particularly over the last five years when additional excise tax burdens of Rs 115 crores have been imposed. Second, it forms the domestic base on which the unmanufactured tobacco sector has developed exports of Rs 90 crores in 1975-76. The two sectors are inextricably inter-related and cannot be viewed in isolation, as tobacco for

domestic and export use comes from the same plant.

Owing to heavy excise taxation the demand and production between 1970 and 1975 have remained in the region of 60,000/65,000 million pieces per annum against government estimates of 80,000 m. for 1975 and 100,000 m. for 1978-79. The existing and licensed capacity is over 150,000 m. pieces and the acute degree of underutilisation is self-evident. Price elasticity values of 2.5 and income elasticity values ranging up to 3.4 have been observed for a spectrum of brands.

The fortunes of the industry affect those of nearly a million tobacco growers and their households apart from a backward linkage effect with suppliers specific to the industry such as cigarette-making machinery, filter rods, cigarette machine tapes who have no

other outlet for their product and who have been very adversely affected by the gloomy demand situation.

A study of the 'reflection ratios' of built-in flexibility and income elasticity of excise taxation reveals sharply declining values of below two in the period 1970-76 compared to rising values in the range of 2-3 in the low tax period 1960-70. Again the growth rate between 1964 and 1969 was 11 per cent per annum when the marginal and average tax burden was low as compared to the static/declining situation now prevalent.

The industry needs relief through a substantial lowering of excise duty rates so that revenues continue to accrue to government from a situation of buoyant growth in this industry with beneficial effects all round.



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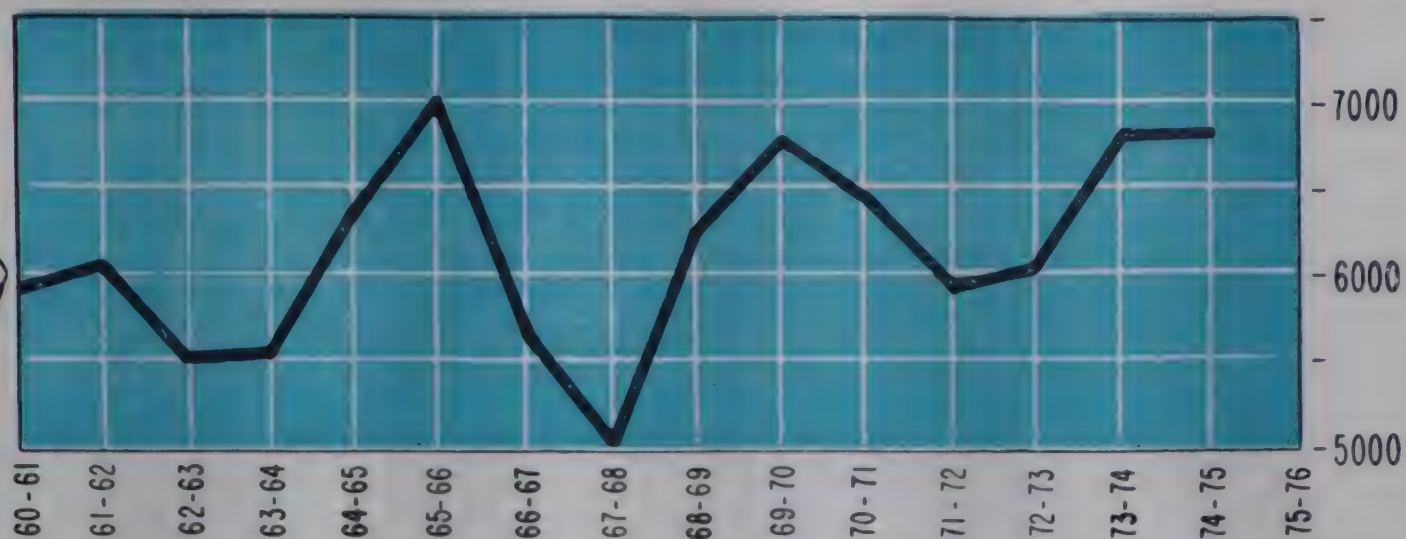
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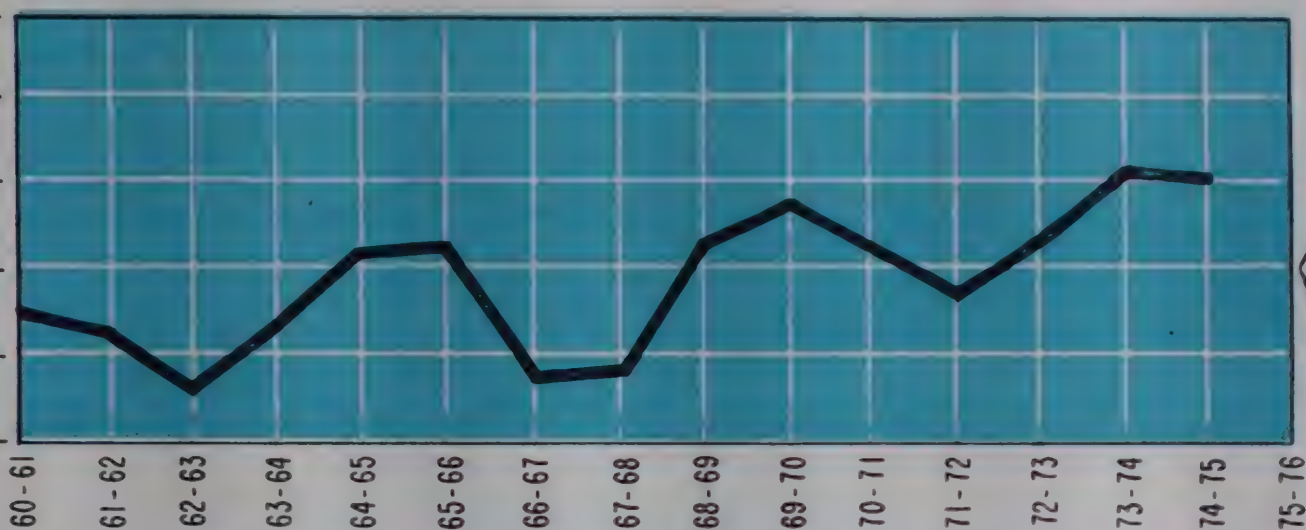
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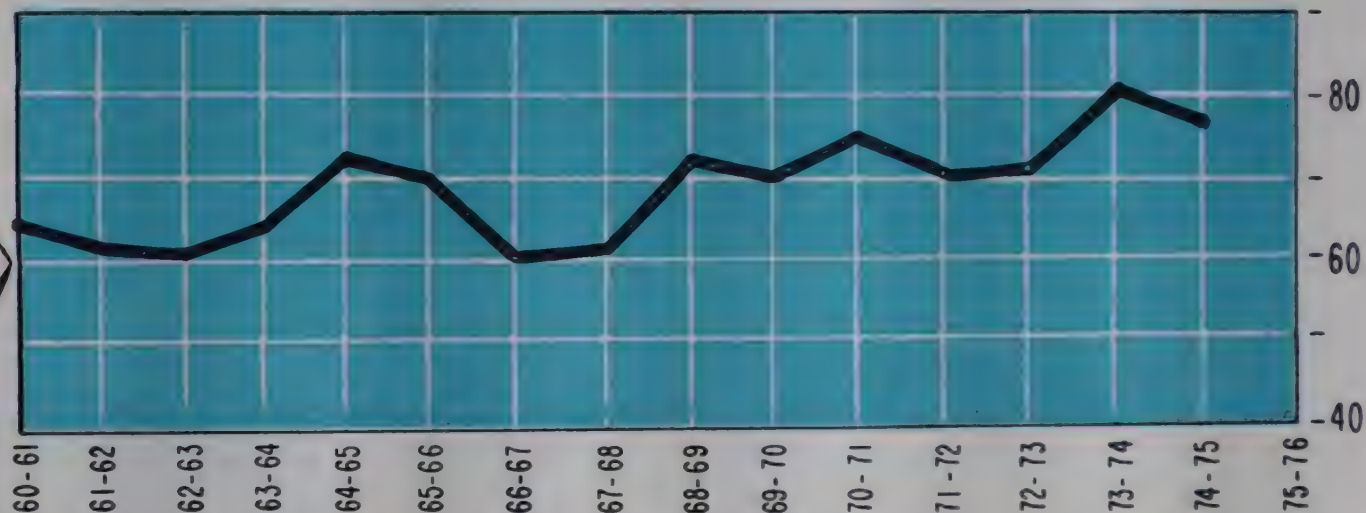


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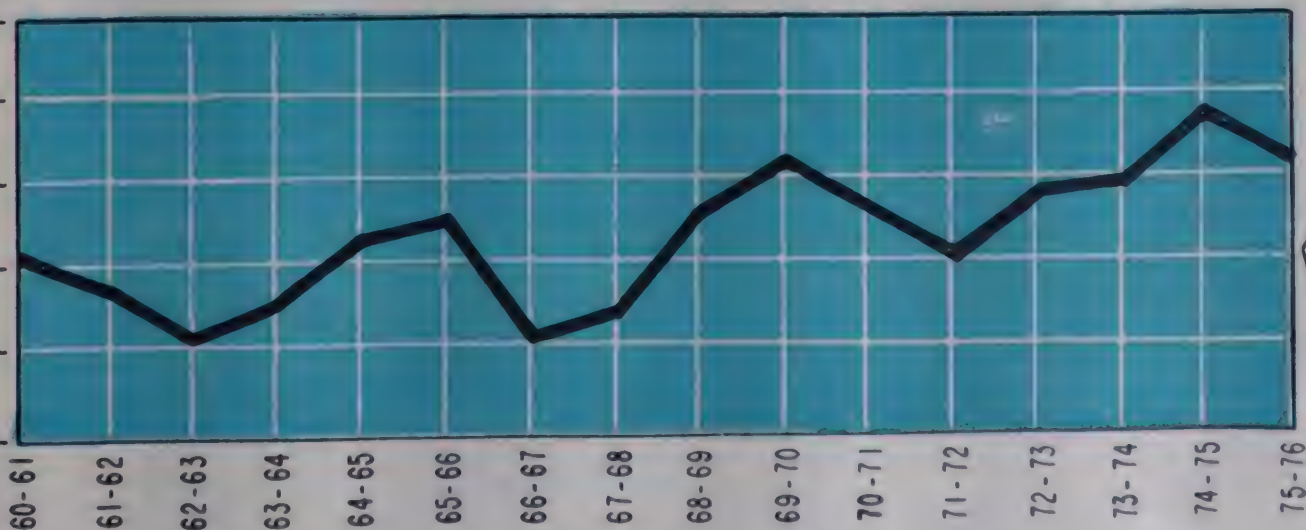


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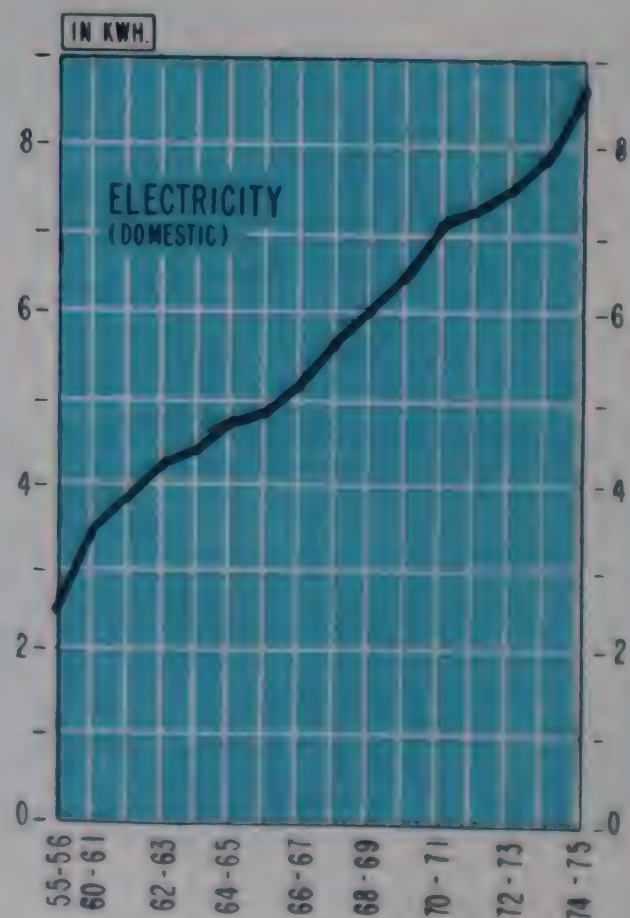
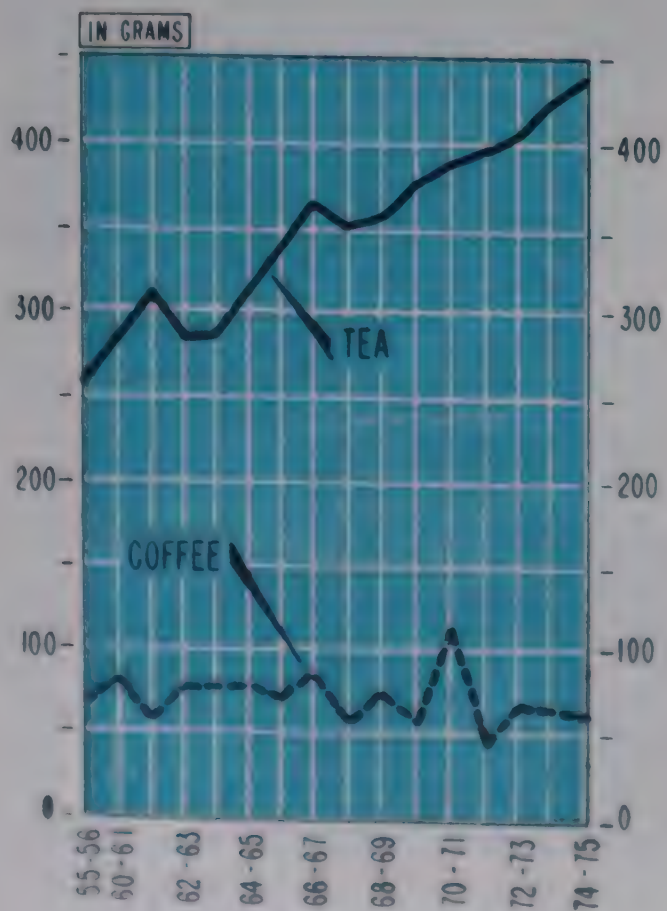
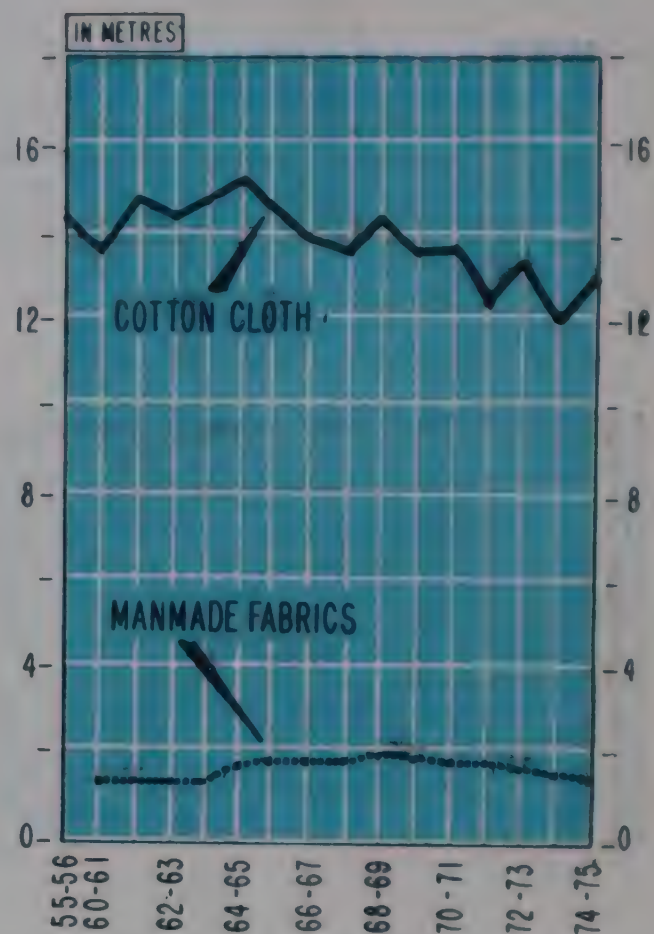
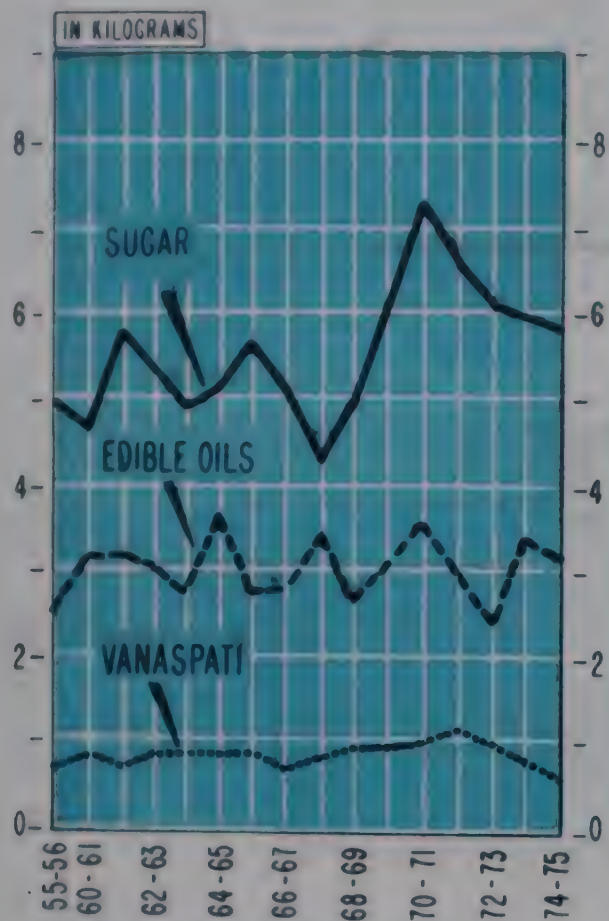


50-
30-
10-

SUGAR OUTPUT
(IN LAKH TONNES)



PER CAPITA AVAILABILITY OF CONSUMER PRODUCTS



Cost inflation hits cotton textile industry

S. V. Rayan

INDIA'S FINANCE minister, Mr. Subramaniam, stated the other day that it was incorrect to say that the Indian economy was still passing through a recession, because industrial production had picked up substantially in 1976-77, with index thereof being expected to show an annual growth of about 10 per cent. But the cotton textile industry is an exception to this definition. Although production in 1976 was slightly higher than in 1975, the financial health of the industry suffered a further setback. More mills closed down in 1976 than in any year since 1970. As at the end of November 1976, as many as 41 mills remained closed despite the take-over of two large mills in Kanpur by the National Textile Corporation (NTC) and one mill by the Maharashtra government in Phulgaon near Wardha. Some 36,000 workers had lost their jobs. This may appear to be an insignificant number, having regard to the fact that the total strength of the workers employed by the mill industry is 780,000. But what is important is the trend.

losing mills

In addition to closed mills, quite a good number of mills have been working only in name and adding to their losses by paying the workers full wages. Because of the risks involved in total closure or laying off of workers under the emergency, managements of these mills have just been carrying on somehow. There is, however,

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a limit to their doing so and it would not be surprising if the number of closed mills were to show an increase in the ensuing weeks.

Financial difficulties are the main reason given by the mills for closing down. This outcome has been the result of unprofitable working by the vast majority of mills since the second half of 1974. The strong anti-inflationary measures initiated by the government in July 1974 hit the cotton textile industry in two ways. First, it led to large accumulation of stocks and uneconomic price realisation. And, second, the cost of bank credit went up sharply and the availability of credit itself became scarce. Mills had to resort to distress sales to maintain their cash flow. The simultaneous drive against black market and unaccounted money deprived the cloth trade a ready source of finance, forcing it to buy their requirements on a hand-to-mouth basis.

difficult period

Such was the beginning of the difficult period through which the cotton textile industry has been passing for the past 2½ years. The year 1975 brought no cheer to the industry. On the contrary, the burden of controlled cloth, which was doubled from 400 million metres to 800 million metres in April 1974, became unbearable especially as the full brunt of 800 million metres came to be felt in 1975. The loss to the industry in fulfilling this social obligation was of the order of Rs 100 crores. The industry was, of course,

free to recover this loss by raising the prices of non-controlled cloth. But, with demand for cloth remaining sluggish on account of consumer resistance, it could not do so. The availability of controlled cloth at a price which did not cover even the cost of cotton depressed the market for handloom and powerloom goods and this in turn hit the yarn market, thereby aggravating the problem of existence for the mills supplying yarn to the decentralised sector.

power cuts

Unprecedented power cuts in the first half of 1975 added to the difficulties of mills in most textile centres, particularly in the south, where spinning mills predominate, and in Uttar Pradesh, which had been hit by power shortage for three consecutive years. All this combined to undermine the financial resources of mills and scores of them were deep in the red, having lost their capital and reserves that had been strengthened by the excellent results in 1973 and the first half of 1974.

The position deteriorated further in 1976. Although production was better and offtake of yarn and cloth was reasonably satisfactory, the price realisation was poor and inadequate to cover the tremendous increase in costs. The villain of the piece was cotton. A heavy shortfall in cotton production, in the face of rising consumption, led to a phenomenal increase in cotton prices. The mills were simply unable to pass on the burden of inflation in cotton prices to consu-

mers of yarn and cloth. In the cost of making cloth, cotton accounts for 45 to 50 per cent, depending upon the extent of processing of cloth. In the case of yarn, cotton forms 65 to 70 per cent of the cost. Between October 1975 and October 1976, whereas cotton prices had increased by as much as 56 per cent, wholesale prices of cloth had risen by only five per cent and yarn prices by 28 per cent. It is worth noting, in this connection, that there was hardly any significant relief in the other cost elements such as wages, stores and spares, dyes and chemicals, and interest charges. In such a state of affairs, the mills could not but lose money and that at heavy rate. Those mills which had suffered losses in 1975 will show bigger losses for 1976 and those that had reported profits will reveal very much smaller profits or even losses. The exceptions will be a few, especially those that have diversified their production and had the good fortune to modernise their equipment.

harmful scheme

In a way, the government recognised the great harm the controlled cloth scheme was doing to the cotton textile industry when it decided towards the close of 1975 to exempt the mills belonging to the NTC, all of which had been suffering heavy losses, month after month, from the obligation to manufacture controlled cloth. Simultaneously, it extended this concession to sick mills in the private sector too. The definition of

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ick mills for this purpose was those that had wiped out their reserves in full. On this basis, some 40 composite mills in the private sector became eligible for exemption straight away. As the year 1976 progressed and the balance sheets of mills for 1975 became available, some more mills qualified for exemption. Again, towards the close of July 1976, the government further relaxed the controlled cloth obligation by deciding that those mills which had wiped out 75 per cent of their reserves would get abatement in their obligation to the

extent of 75 per cent and those that had lost 50 per cent of their reserves would get relief to the extent of 50 per cent. In order to stimulate exports, government permitted the exporting mills to have some relief in the controlled cloth obligation: the formula was that mills exporting more than 20 per cent of their total packings would be eligible for relief to the extent of their exports. Thus, all these exemptions brought down the obligation and production of controlled cloth in 1976, as will be seen from Table I.

The obligation for the last

quarter of 1976 is an estimated 105 million sq. metres and that for the first quarter of 1977 about 100 million sq. metres. In other words, the total obligation for 1976-77 fiscal year would work out to 450 million sq. metres and actual production has to be of the same magnitude, as the Textile Commissioner has already warned the industry that mills defaulting to fulfil their obligation would be severely dealt with.

Although the controlled cloth obligation has come down by a'most 50 per cent, this has meant no relief to the individual mills that are not eligible for exemption. Their obligation is worked out on the same basis as in 1974-75 taking the industry's obligation to be 200 million sq. metres a quarter. In this process, the financial strength of the remaining mills also gets weakened. Surely, the

rationale behind the exemptions from the controlled obligation is most unsound and illogical. The industry's persistent plea for an adequate increase in the price of controlled cloth scheme is yet to evoke a positive response. The least that government should do is to fix the ex-mill price of controlled cloth at the cost of manufacturing it excluding depreciation, if need be. This itself would mean a sacrifice of about 15 per cent on the fair ex-mill price of the cloth in question. As for the quantum of controlled cloth, it need be no more than 400 million sq. metres a year and this can be obtained by asking all composite mills to supply 10 per cent of their production in varieties to be specified by the government. The sooner the government modifies the controlled cloth scheme on these lines the better it would be for the health of this most important

TABLE I
Production of Controlled Cloth 1974 to 1976

Period	Obligation (in million sq. metres)	Production (in million sq. metres)
1-4-74 to 31-3-75	800	823
1-4-75 to 31-3-76	721	701
1-4-76 to 30-6-76	122	140
31-7-76 to 30-9-76	119	57

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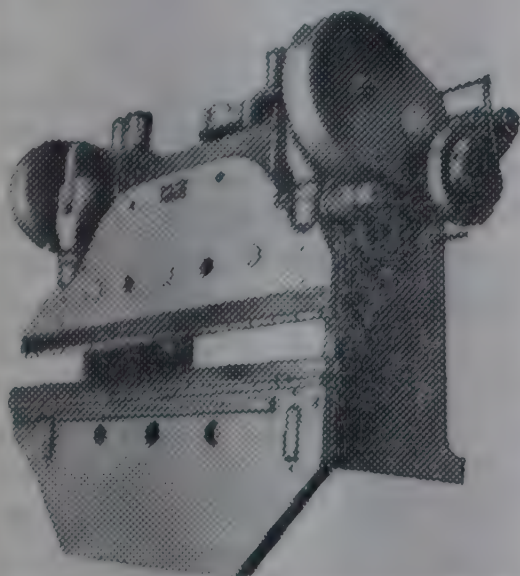
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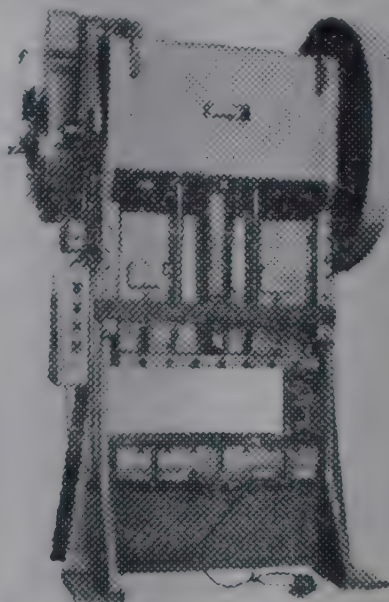
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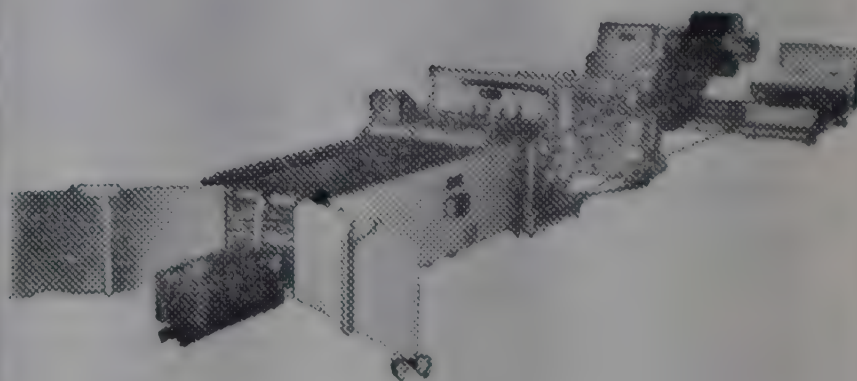
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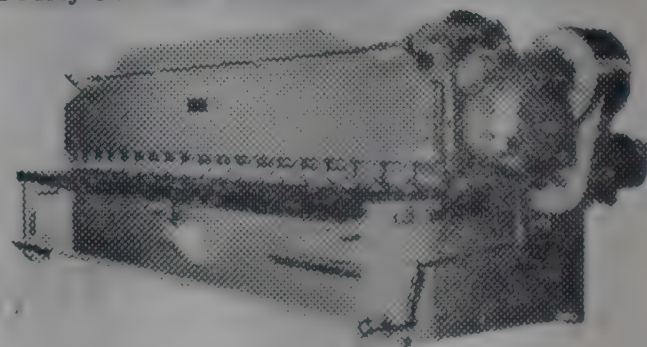
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industry of the country, accounting as it does for (a) over one-fifth of industrial production, (b) about one-fifth of all factory labour, and (c) 88 per cent of production of apparel fabrics, a basic necessity of life.

The trend of cotton production in India has been highly erratic and lagging behind the country's requirements almost always, as Table II show:

cotton production

To the credit of the government of India, it must be said that, in the last five years, it has paid increased attention to the development of cotton production than it did in the 'fifties or 'sixties. If nevertheless progress in cotton production has not kept pace with the needs of the country, it is because of two reasons: one is that cotton is a crop that is highly sensitive to the vagaries of monsoon and other climatic conditions. Unfortunately, even today only 24 per cent of the area under cotton has the benefit of irrigation. While this compares favourably with only four per cent of the cotton acreage that was irrigated at the time of Independence, the fact remains that over three-fourths of the land devoted to cotton is rain-fed and, what is more, more than half of such land is in

regions subject to precarious rainfall.

Besides the restraints on cotton production stemming from the vagaries of monsoon, a new factor has come to prevail in recent years that yields negative results. And that is the monopoly procurement scheme of Maharashtra. Ostensibly intended to benefit the grower by eliminating the middle men between the grower and the mills, the scheme has resulted in cotton being an unpopular crop among the farmers, because they have to wait for nearly seven to 10 months for getting 50 per cent of the price realised by the state government on their crop. They have also to undergo other hardships such as arbitrary decisions on the quality and staple length of cotton by the selectors in charge of cotton purchases on behalf of the monopoly procurement agency. It will require many pages for detailing the deficiencies in Maharashtra's monopoly procurement scheme.

basic reason

Suffice it to say that it has largely contributed to a progressive fall in Maharashtra's cotton crop; in the current (that is, 1976-77) season, it is expected to be no more than 800,000 to 900,000 bales according to the union Commerce ministry,

as against 1.7 to 1.8 million bales which Maharashtra used to produce in a normal year before the enforcement of monopoly procurement. Indeed, the trade estimates place the crop even lower, namely, 600,000 to 700,000 bales. At this rate, Maharashtra will soon become an insignificant producer of cotton, if not completely disappear from the cotton map of India, thereby offsetting the gains made in cotton production in the other parts of the country. If the near self-sufficiency which India had attained in cotton two years ago now seems to be a distant goal, and if the industry, government and the press are all united in thinking in terms of making the textile industry a multifibre industry as rapidly as possible, it is largely the result of failure of Maharashtra government on the cotton front.

hike in prices

The shortfall in cotton production has pushed up the cotton prices to new peaks which in turn has contributed in a significant measure to the revival of upward trend in price levels in the country. It has forced the government to spend foreign exchange liberally on imports of cotton and man-made textile fibres, so that employment and production

may not be affected. The Cotton Corporation of India has so far arranged for import of 500,000 bales of cotton involving Rs 145 crores in free foreign exchange from countries outside the USSR and 23,000 bales from the USSR. Further purchases may be of the order of 400,000 bales.

government subsidy

World cotton prices being substantially higher than the domestic cotton prices, government had been selling such cotton to the mills at the prevailing prices for corresponding varieties of Indian cotton. In effect, therefore, the government has been subsidising the imported cotton and the cost of this subsidy to the exchequer is expected to be neutralised to a great extent by the duty collected on imports of polyester fibre. In addition, imports of cellulosic staple fibre and polynosic fibre have been permitted free of duty and placed on Open General Licence from 24.7.1976 to 31.10.1977. Imports of polyester fibre, though still subject do duty, have been decanalised from November 22, 1976 and placed on a free licensing system; imports of this fibre, too, will be allowed up to 31.10.1977.

As at the time of writing, licences for a total value of Rs 85 crores have been issued for viscose staple and polynosic fibre. These will bring in 80,000 tonnes of fibres equivalent to 450,000 bales of cotton. As for polyester, contracts have been entered into for a quantity equal to 50,000 bales. In order to ensure that these fibres are consumed by the industry, the government has made it mandatory for the mills to use at least 10 per cent of non-cotton fibre. Further, to encourage the domestic production of synthetic fibres, the

TABLE II

Trend of Cotton Production during 1970-71 to 1976-77

(In 100,000 bales of 170 kgs each)

Year	Production (Trade estimate)	Mill consumption	Exports	Extra factory consumption	Total requirement	Deficit (—) or Surplus (+)
Annual average of five-years ended						
1970-71	62.60	64.42	2.25	2.85	69.52	—7.92
1971-72	77.82	67.33	2.47	3.20	73.00	+4.82
1972-73	69.56	68.67	1.84	3.20	73.71	—4.25
1973-74	67.24	72.78	3.66	3.20	79.64	—18.40
1974-75	73.59	71.10	1.00	3.20	75.30	—1.71
1975-76	66.50	75.43	4.10	3.20	82.73	—16.23
1976-77 (Advance estimate)	64.00	75.00	1.00	3.20	79.20	—15.20

government has simplified the procedure for import of the required raw materials, namely, Caprolactum and DMT.

The cost of imported viscose staple fibre is Rs 10 to 11 per kg which is the same as domestic prices, while that of polyester is about Rs 64 per kg, against the average market price of Rs 80 to 85 per kg of domestically produced fibre.

The combined effect of all these measures so far has been to halt the upward trend in cotton prices. It, however, remains to be seen whether the prices will flare up again when the marketing of the domestic cotton crop comes to an end which it normally does by the end of March and early April.

modernisation

Modernisation is a perennial problem of our cotton mill industry now in its 122nd year. It is also a problem for which this industry has been maligned and misunderstood much. Its critics assail it on the ground that the managements have diverted the profits of this industry for establishing other industries and for distributing fat dividends to shareholders. This is a prejudiced view, totally ignoring the facts that (a) the profitability of this industry has been proverbially low, often about half of that of other industries, and (b) within the resources available, the industry has devoted much to modernisation; this is substantiated by the Reserve Bank data on corporate finance showing assets formation. Unfortunately, the critics do not seem to bother to go into all available information and take an objective view. During the four years 1970-71 to 1973-74, for which figures are available, cotton textile industry retained, on an average, 63 per cent of

its profits after tax as against 59 per cent retained by all industries. In the year 1973-74, when cotton textile industry made good profits, it retained 80 per cent of profits after tax as against 66 per cent of all industries. In the ten-year

period 1963-64 to 1972-73, net profits inclusive of development rebate of mills covered in the RBI statistics amounted to Rs 127 crores and depreciation Rs 355 crores, making a total of Rs 482 crores. During the same period, the investment in

fixed assets was Rs 474 crores. The Reserve Bank statistics also show that cotton mill industry gross fixed assets formation averaged 7.1 per cent in the nine years ended 1973-74, whereas its gross profits as a percentage of net sales for the



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same period averaged only 6.3 per cent. As compared with this, the gross fixed assets formation of all industries was 8.3 per cent against their profit percentage of 9.9. This shows that, compared to its profitability, the cotton mill industry's investment in fixed assets has been commendable.

Nevertheless, there is a lot more to be done for modernisation. Because of the enormous rise in the cost of textile machinery, the resources utilised for modernisation have proved to be inadequate. Further, the industry has suffered such heavy losses in the last two years that, without massive doses of institutional financial aid, no worthwhile progress can be made in modernising the industry's equipment. A welcome development took place in this respect early in November 1976. And that was the long-expected opening of

the soft-loan window by the Industrial Development Bank of India. Under its soft-loan scheme, the IDBI will give term-loans "for modernisation, replacement and renovation of plant and equipment so as to achieve higher and more economic levels of production to industrial concerns which are not in a position to attain viability in a relatively short period following modernisation, etc. The basic consideration for assistance would be weakness of units arising from mechanical obsolescence and not due to management deficiencies." The terms of assistance are: (1) interest at a concessional rate of $7\frac{1}{2}$ per cent per annum, and (2) repayment of the loan over a period of 12 to 15 years with an initial moratorium of three to five years. In deserving cases, moratorium on interest payment in the initial period will

also be considered. Convertibility of loans into equity will not be applicable to assistance under the scheme. These terms are reasonable, but, with a large number of mills confronted with the serious problem of finding enough working capital for day-to-day operations, not many units may be forthcoming to avail themselves of this soft-loan facility until trading conditions for cloth and yarn improve and there are indications that such improvement will be sustained at least for a reasonably long period.

Now for a few facts about the cotton textile industry's production and export performance in 1976. The severe power cuts that plagued the industry almost all over the country in the first half of 1975 and had adversely affected the output of cotton yarn and cloth in that year were happily not experienced in 1976. There

was, of course, some power shortage in some states, but most of it was made good by the captive power generating sets in the industry. Until the end of September 1976, yarn and cloth production was sustained at a fairly high level, with cotton consumption averaging at the annual rate of 7.8 million bales, a new peak in the annals of the industry. In the last quarter of 1976, however, production tended to flag, for reasons mentioned earlier in this article, with the result that the performance for the year as a whole failed to come up to the earlier optimistic expectations. As at the time of writing, data are available for 11 months, January to November, of which those for the last three months are provisional. On the basis of these figures, yarn production in 1976 may be placed at 1,010 million kgs, as compared with 989

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million kgs in 1975 and 1,007 million kgs in 1974, the highest recorded for any year till then. It is not clear as yet whether the final figure for 1976 will at least be that nominally higher than the 1974 peak as the aforesaid provisional figure suggests. It, however, looks as though 1976 yarn production will be distinctly better than that in 1975.

Turning to cloth, one finds that production by the mill sector in 1976 was fractionally lower than in 1975, that is, 3,920 million metres, as against 4,032 million metres. It was substantially down as compared with 4,316 million metres produced in 1974; indeed, it was the lowest for the 'seventies so far.

cloth production

Estimates of cloth production on powerlooms and handlooms, the so-called decentralised sector, in 1976 place it at 4,150 million metres; this compares favourably with 4,002 million metres in 1975 and 3,968 million metres in 1974, and is the highest for any year so far. Indeed, the decentralised sector attained the distinction of being the major producer of cloth in the country in the year that is just over.

Combined production of cloth in both the sectors in 1976 works out to 8,070 million metres, or say, 8,100 million metres in round figures. While this is a shade higher than the 8,034 million metres woven in 1975, it is perceptibly lower than the output of 8,284 million metres in 1974.

Exports of cotton textiles have fared well and it looks as though the target of Rs 400 crores fixed by the government for fiscal year 1976-77 will be exceeded by an impressive margin. In April-September

1976, that is, the first half of the current fiscal year, exports of cotton textiles aggregated Rs 233 crores, a rise of Rs 109 crores or about 90 per cent. If one goes by the figures for the first nine months of calendar

year 1976, one finds the improvement to be even more striking, with the exports totalling Rs 387 crores, as against Rs 186 crores during the same period of 1972. For this achievement, credit goes to

both the government and the industry, the former having fully backed the concerted efforts of the latter to push the exports in the face of severe competition in the world textile market.

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Sugar industry: production up and up

A. S. Ruia

THE NEW crushing season 1976-77 began on October 1, 1976. The season has started on an optimistic note. The condition of the cane crop is generally reported to be fairly satisfactory except for some minor damage to it in certain regions. In some areas in the north, an attack by pyrrilla pests was reported but following adequate rainfall and timely spraying of insecticides, the situation has been brought under control. Similarly some damage to the crop has been reported in the coastal areas of Andhra Pradesh following severe cyclone. In Tamil Nadu recent heavy incessant rains have affected the cane crop, while in Karnataka drought conditions in the initial period have affected its growth. Notwithstanding such damages to the crop, on an overall basis the crop condition is satisfactory, cane yields being generally better and its quality distinctly superior.

maximising production

The government has also introduced measures to maximise output. The excise rebate concessions on excess production, which were withdrawn during the last season (1975-76) have been re-introduced. Although the scheme as announced needs certain modifications which have been discussed later to make it a really effective instrument for maximisation of output, the very fact that the government has appreciated the need for re-

introducing the scheme clearly demonstrates its anxiety to maximise output. Some of the state governments have introduced certain regulatory measures on the operation of power crushers and khandsari in their respective states with a view to ensuring larger availability of cane for sugar production. Notwithstanding the fact that there is need for further strengthening of these measures, on current reckoning the country is well-poised to establish a new record in sugar output during the season 1976-77.

record output

Based on the initial estimates of output from the various regions, the total sugar production is placed at five million tonnes which is higher than the last peak of 4.79 million tonnes achieved during the season 1974-75, with an installed capacity of about 4.4 million tonnes. Since then the capacity has gone up substantially to 4.77 million tonnes in the last season (1975-76) and is expected to cross the five million mark in the current season (1976-77).

The progress of the crushing season so far goes to confirm the above optimism. Till December 7, 1976, 673,000 tonnes had been produced as against 387,900 tonnes during the corresponding period in the last season. Even in the 1974-75 season, the output was only 600,000 tonnes. Already 225 factories have commenced crushing operations in this season as against

about 203 factories during the corresponding period in the last season.

The expected increased level of output will undeniably make available larger exportable surplus out of the current season's production. Sugar being an essential item of mass consumption it has been the government's policy and rightly so to confine exports to the available surplus stocks after fully providing for the domestic requirements. In fact, additional capacity has been established with a view to exporting sugar on a regular basis. That being so, our country has to establish itself as a dependable exporter of sugar in the world market. There is therefore an imperative need for the formulation of an appropriate policy for exporting the surplus stocks expected to be available. Efforts need to be made to export maximum quantity during the early part of the year for obvious reasons. It would con-

siderably reduce the industry's requirements for additional credit which would otherwise be substantially more than last year and also ease the storage difficulties of the factories. It would help factories to maintain regular cane payments. Even quality consideration would demand maximum exports during the pre-monsoon period.

In recent years, sugar has secured for itself a prominent place on the export map. During the financial year 1975-76 it was the largest single foreign exchange earner for the country contributing about 14 per cent of the total export earnings. Sugar exports totalled 1.205 million tonnes earning a foreign exchange of Rs 475 crores including a rupee profit of Rs 155 crores for the exchequer. This wholesale trend however could not be maintained due to a sharp break in sugar production during the last season (1975-76)

Growth in Sugar Industry

Season	Sugar production (in lakh tonnes)	Consumption (in lakh tonnes)	Exports (in lakh tonnes)	Excise* Duty (Rs/crores)	Cess/purchase tax collection by important states (Rs crores)
1970-71	37.40	40.25	3.90	137.98	18.53
1971-72	31.08	37.95	1.28	163.20	23.06
1972-73	31.72	35.14	1.10	175.40	28.00
1973-74	39.49	35.22	4.39	195.47	30.00
1974-75	47.92	34.72	9.41	190.50	33.00

* While the sugar season begins and ends with October/September the excise and cess/purchase tax collections relate to April/March.

Mr A.S. Ruia is the chairman of Indian Sugar Mills Association.

When the output declined to only 4.26 million tonnes. The government even found it difficult to make available the total quantity of 600,000 tonnes earlier allocated for exports. It had to defer shipment of 50,000 tonnes in order to maintain internal supplies in the wake of a sharp decline in production.

firm prices

Lower output also affected the market sentiment and prices tended to harden from the month of July when the main crushing season was over. Free market prices which ruled at very low uneconomic levels throughout the season due to the pressure of khandsari started firming up. The government as well as the industry viewed such trends with concern, especially as the festival months of Dussehra and Diwali were approaching fast. It was the bold decision by the Indian Sugar Mills Association (ISMA) to voluntarily impose a ceiling on the price of free market sugar that helped not only to curb the bullish trends but the prices declined by about Rs 70 per quintal or 70 paise per kg. The cooperative sector also followed suit. The free sugar was thus made available to the consumers throughout the country at reasonable prices.

The industry's aforesaid gesture also received appreciation of the government, who did not increase the tariff value for free sale sugar in the months of September and October, with a view to avoiding any increase in the incidence of excise duty thereon. For the months of November and December, however, the government increased the tariff value from Rs 310 to Rs 335 per quintal, with a corresponding reduction in the rate of the

basic excise duty on free sugar from 37.5 per cent to 34 per cent ad valorem so as to ensure that there was no increase in the actual incidence of excise duty. The reduction had, however, been made applicable only for the months of November and December. There is need not only for continuing the same but also for further reduction therein in the larger interest of increasing the sugar output. For, the excise duty

on free sugar has gone up progressively in the recent past to the disproportionately high rate of 45 per cent (41.5 per cent for November & December only) ad valorem thereby bettering the competitive capacity of power crushers and khandsari units with consequent fall in sugar output. Reduction in the excise duty on free sugar is therefore essential to guard against undue diversion of cane from

factory to power crushers and khandsaris.

The voluntary price control involving a price reduction of about Rs 70 per quintal or 70 paise per kg clearly demonstrates ISMA's firm opposition to any undue increase in the price of free sugar. It is equally important to guard against any undue price slump. The government has the effective mechanism of monthly releases, which is intended to guard

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against wide price variations either way. An effective policy of exports to ensure timely disposal of the available surplus coupled with a judicious application of the policy of the monthly releases should effectively curb any undue price variations.

While it is appreciated that some price variations are inherent in free markets and cannot be entirely ruled out, undue fluctuations either way are undesirable which help no one while provoking avoidable public criticism against the industry. ISMA's aforesaid decision vindicates its will and desire to ensure price stability in the free market on a long-term basis. Since it has come forward on its own to maintain the price level when it was rising, it could hopefully look upon the government to similarly avoid any undue price slump, following heavy pressure of khandsari. Unfortunately it has been the sad past experience that whenever prices have started coming down, corrective measures have either not been taken or taken very late. Since the government is regulating both the export and the monthly releases of sugar, it is hoped that it would devise an appropriate policy to ensure a stable and economic level of prices throughout the year.

partial decontrol

The existing policy of partial decontrol with levy and free sugar proportions of 65:35 has been continued for the season 1976-77. Likewise, the statutory minimum cane price too has been continued unchanged at the existing level of Rs 8.50 per quintal linked to a basic recovery of 8.5 per cent, disregarding the Agricultural Prices Commission's recommendation for an increase of one rupee per quintal therein and

the industry's request for increasing it by Rs 1.50 to Rs 10 per quintal in order to ensure better parity between cane price and other competing crops.

The government has, however, reintroduced the scheme of excise rebate concessions on excess production with a view to maximising sugar production during 1976-77 season. Basically the scheme has been framed on the same lines as in the season 1974-75. The crushing season has been broken up into two parts, namely, early period comprising the months of October and November and rest of the season being the period between December to September for reckoning excess production eligible to excise rebates.

discriminatory basis

However, a discriminatory basis has been used for computing the base level of output for the two periods; while for the earlier part it is the average production during the preceding five seasons, for the rest of the season, during December/September period, it is the average production during the preceding three seasons only. In order to make the scheme really effective for increasing production, it is necessary to modify it to the effect that for the rest of the season also the base level of output is reckoned at the average production during the preceding five seasons. Another modification desired is that in all such cases where base level of output is nil, the entire production in the relevant period be reckoned as excess production for the purpose of allowing excise rebate concessions. This is essential to enable larger participation of sugar factories in the drive to increase output. As a natural corollary to this, the stipulation that such periods

when factories did not work should be excluded in working out the average, needs to be withdrawn. These are the minimum modifications essential to make the scheme really effective and workable.

With sugar production going up, the credit requirements of the industry are also likely to go up substantially. During the peak period April/May 1977, when the stocks with the factories reach peak level, the credit requirement of the joint stock and public sector factories who depend on nationalised commercial banks, is assessed at about Rs 400 crores including funds required for inventories of consumable stores. Against this, the peak level of credit actually made available to the industry in the past was only of the order of Rs 210 crores in the season 1974-75. Since larger credit is required by this industry for financing production and for

maintaining prompt and regular cane payments, it is essential that the Reserve Bank of India issue necessary directives to all the nationalised commercial banks to adequately increase the requirements of the sugar factories. Unfortunately, it has been the sad past experience that whenever production has gone up, in the absence of corresponding increase in bank credit working of the factories was seriously affected and the factories could not maintain prompt cane payments and meet their other liabilities. Recurrence of such a situation has to be avoided in the larger interests through provision of adequate bank credit to the sugar industry to finance its increased production. Further, the high interest rates and bank margins need to be reduced.

With prospects of record sugar output a sense of optimism is prevailing all round. While it is so, the joint stock

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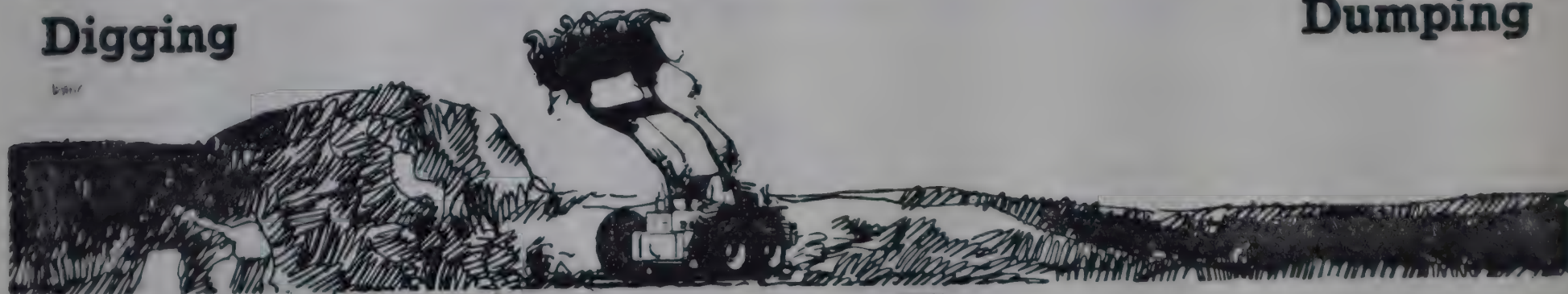
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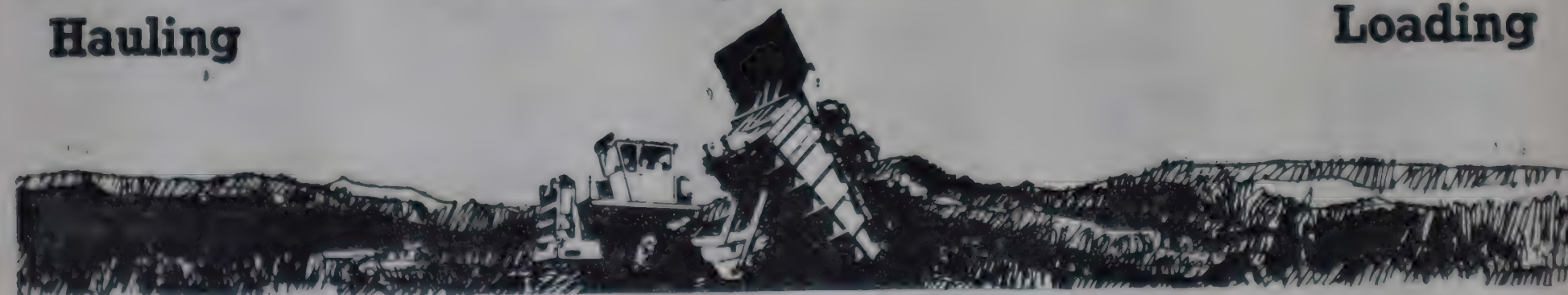


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ctor factories in Maharashtra are facing a very serious crisis due to the decision of the Maharashtra State Farming Corporation Ltd (MSFC) to auction its cane instead of supplying the same to the concerned joint stock units as in the past. This is contrary to the agreement reached between the factories and the MSFC at the time of the take-over of the farms.

These farms have been the mainstay of sugar cane supplies to the joint stock factories. It is common knowledge that it is these factories in Maharashtra which had developed since the thirties large tracts of lands most of which were like wasteland. These farms were taken over under the Maharashtra Agricultural Lands (Ceiling on Holdings) Act, 1961 and vested in the Maharashtra State Farming Corporation Ltd but their integrity was not dis-

turbed. Since then, cane grown in these farms was being supplied to the joint stock sugar factories in Maharashtra. However, in order to maximise its profits and take advantage of its monopolistic position, the MSFC has now decided to auction its cane.

This decision of the MSFC has come in handy to the co-operative factories to augment their cane supplies and take advantage of the excise rebates announced on additional production. The co-operative factories which are already assured of their cane requirements, would be in a position to make high bids for MSFC cane and divert it for their use as that would be an additional supply for them. Against this, the joint stock sector factories which have been traditionally depending on the MSFC cane, would be deprived of their assured source of supply and to that extent their cane avail-

ability would be reduced.

A strange result would thus follow. The additional production achieved by the co-operative factories would be the same as would be lost by the joint stock sector factories. Therefore, there would be no net advantage to the country's sugar output, while the additional production achieved by the co-operative factories would entitle them to excise rebates thereby depriving the central exchequer of substantial revenue. Needless to say so far as the joint stock sector factories are concerned, their working would be completely disrupted and it is not unlikely that they may have to suspend crushing. For, most of them depend on MSFC cane for a very large proportion of their present supplies. It would also be against the established policy of the government to ensure an equitable distribution of the available cane supplies.

There is yet another aspect of the matter which has to be considered. The unduly high prices offered by the co-operative sector for the MSFC cane in their bid to deprive the joint stock sector factories from their traditional supplies, would set in a cane price war which would be contrary to the government's policy of holding the price line. Moreover, with the policy of the co-operative factories to distribute their entire gains amongst the member factories to avoid taxation, the government would also lose substantially in income-tax and corporate tax. If the same cane was crushed by the joint stock sector factories and if they had made normal profits, the government would have received its due share by way of income-tax and corporate tax.

It is unfortunate that such significant considerations have been overlooked by the MSFC in deciding to auction its cane.

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The image is a composite of three main visual elements. On the left, a woman in a patterned saree is smiling and holding a tray with several small bowls of food. In the center, there is a detailed map of the Hosur industrial complex, showing a grid of plots and surrounding infrastructure. On the right, there is a smaller map of the state of Tamil Nadu, with the location of Hosur marked. At the bottom of the image, there are logos and text for SIPCOT and the State Industries Promotion Corporation of Tamil Nadu Ltd.

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Woes of vanaspati industry

Hardev Singh

THE PRESENT installed capacity of vanaspati industry is around 26 million tonnes corresponding to 85 units, out of which 2 units have closed down. The output of the remaining 83 units in operation was 402,475 tonnes in the first nine months of 1976. For the full year the output might reach 50,000 tonnes which will be substantially higher than the 1975 output of 453,427 tonnes. The worst recent year was 1974, when production at 354,105 tonnes was nearly 58 per cent of the peak reached in 1972 at 602,245 tonnes. The trend of production during the last five years, therefore, has been quite erratic. (See table below)

Year	Output (tonnes)
1972	602,245
1973	465,329
1974	354,105
1975	453,427
1976 (Jan-Sept)	402,475

In 1973 the failure of the groundnut crop in this country caused oil prices to rise steeply. As the government was reluctant to allow a rise in vanaspati prices in line with oil prices, the industry was allotted cheap imported oils to neutralise the rise in the cost of indigenous oils. Industry however found it hard to neutralise the rising cost of production leading to the closure of various factories. There was, therefore, acute shortage of vanaspati in 1973 in the entire country. In 1974 the position worsened, especially after the month of May, when imported oils were not

available and the government decided to freeze vanaspati price at a level below the existing price of certain edible oils.

In January 1975 vanaspati prices were decontrolled, though restriction was placed on the use of groundnut oil to a maximum level of 25 per cent. A minimum use of cottonseed oil of 30 per cent was also made compulsory. Vanaspati output in 1975 improved by nearly 30 per cent over the previous year, though high prevailing prices of vanaspati curbed consumption. In early 1976 the prices of vanaspati declined along with the fall in the prices of edible oils. This tended to raise the demand as well as the output for the year 1976.

It may be observed that even under comparatively favourable circumstances the utilisation of capacity in vanaspati industry is likely to be only about 40 per cent. This low utilisation has led many units into financial difficulties. The industry, however, is using part of its idle capacity to manufacture industrial hardened oil for soap and fatty acid industries. The production of hardened oil in recent years, as given below, has increased, following the ban on the import of tallow for the organised soap industry since August 1974.

Year	Tonnes
1973	42,543
1974	57,516
1975	72,858
1976 (Jan-Sept)	64,993

The organised units in vegetable oil industry are, however, not permitted to sell hardened non-edible oils to unorganised sector in soap industry, though this sector is responsible for the production of twice as much soap as the organised sector. This is being done to safeguard the use of hardened oils for edible purposes instead of making soap. The industry has made representations to the government to allow the sale of hardened oil to the unorganised soap sector in order to improve the utilisation of its large idle capacity and has offered to use colouring agents and provide others safeguards to see that it was not misused. However, the government has not agreed to any relaxation in this regard.

availability of fat

The unorganised sector in soap industry, on the other hand, does not get hardened fat to make good quality soap because natural hard fat available is either expensive (such as coconut oil) or is available in limited quantities (such as mahua oil). Tallow imports for this sector are also limited.

Several vanaspati factories have installed extra refining capacity to produce refined oil for direct consumption as well as for industrial purposes. In south India traditionally as much refined oil is consumed by people as vanaspati. The government, however, has restricted the manufacture of refined oil by vanaspati manufacturers. As the industry has plenty of idle capacity and is producing enough vanaspati

required by the market, there is little justification in restricting the production of refined oil. In fact in years of shortage of traditional oils such as groundnut and mustard, non-traditional refined oils can help to alleviate the shortage of oils. Blended edible oils coming in vogue in advanced countries are an answer to the shortage of traditional oils and can be popularised in this country too if proper blends of refined oils are encouraged.

constraints imposed

The vanaspati industry has been asked by the government to use only specific oils such as cottonseed oil, groundnut oil, mahua oil, maize oil, nigerseed oil, ricebran oil, watermelonseed oil, sunflower oil, soyabean oil and palm oil. Further constraints have been imposed on the use of oils in vanaspati. For instance imported oils have necessarily to be used to the extent of 50 per cent of the total oil consumption every month. Cottonseed oil is to be used to the minimum extent of 30 per cent of the total over a period of six months. Refined sesame oil and safflower oil have to be used to the extent of five per cent each in every batch of vanaspati production. Shortfall in safflower oil can, however, be made up by the use of sesame oil. The vanaspati manufacturers have also been asked not to use more than 25 per cent of groundnut oil every six months.

Table I gives estimates of edible oils available in the country during the last three years. It may be observed that

The three of us

We two and the sea...

sharing an emotion that's common.

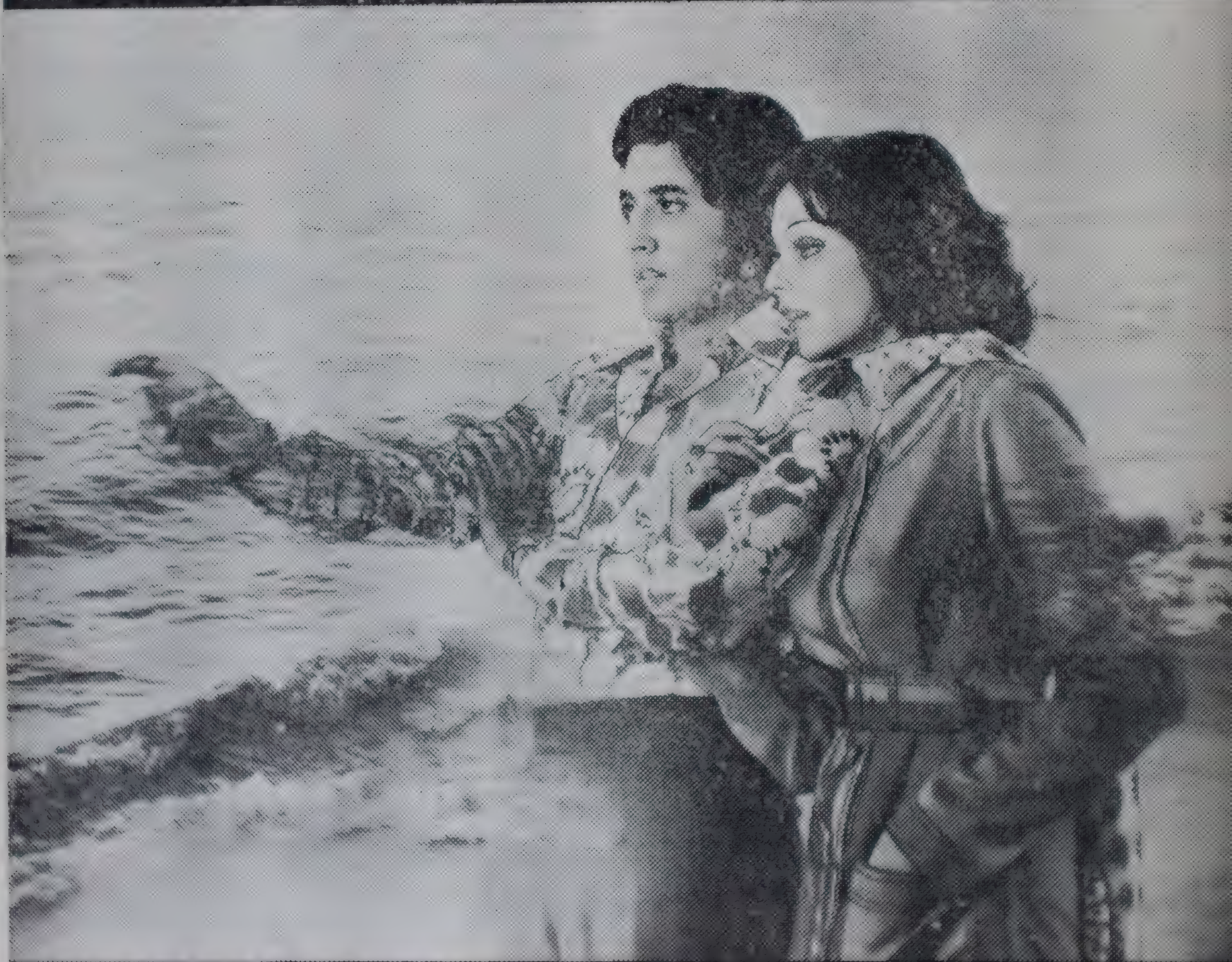
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groundnut oil holds a prominent place in the entire supply position, with mustard oil, coconut oil, cottonseed oil, linseed oil and sesame oil providing additional support. The vanaspati industry, however, has been banned the use of mustard oil, coconut oil and linseed oil. The use of groundnut oil has been restricted to the maximum extent of 25 per cent and sesame oil and safflower oil are to be used only in liquid form. The estimated availability of indigenous oils for hydrogeneration in the current season are: Cottonseed oil (125,000 tonnes), nigerseed oil (5,000 tonnes), sunflower oil (5,000 tonnes), ricebran, maize, watermelon oils (5,000 tonnes), and indigenous soyabean oil (5,000 tonnes) making a total of 145,000 tonnes.

bumper crop

Cottonseed production in recent years has been of the order of 2.1 million tonnes except in 1974-75, when a bumper crop of 2.4 million tonnes was harvested. Cottonseed oil output has been of the order of 150,000 tonnes except during 1972-73 and 1974-75, when production reached 200,000 tonnes. Cottonseed oil production has reached near saturation, as some deshi varieties have low oil content and some seed production is too scattered for economic collection. Estimates for 1976-77 crop have been placed at 185,000 tonnes, yielding 125,000 tonnes of cottonseed oil.

Output of nigerseed grown in Madhya Pradesh, Orissa and Bihar varies annually from 90,000 tonnes to 150,000 tonnes. It is consumed largely among tribal people and in rural areas and the industry is able to procure around 4,000 tonnes to 5,000 tonnes of

nigerseed oil in a year. In the absence of research effort, no significant increase is expected in the yield of nigerseed oil. So far as ricebran oil is concerned, ricebran produced from rice shellers alone can yield ricebran oil. Even in the last bumper rice crop, ricebran oil output was around 60,000 tonnes. Of this, the edible quality was hardly 3,000 tonnes. The output of bran in modern rice mills is too small for installing expensive bran stabilisers necessary to produce edible quality oil.

cost consciousness

Oils account for nearly 85 per cent of the cost of vanaspati. As oil prices fluctuate widely, vanaspati prices also tend to move in line with them. Under these circumstance, manufacturers are keen to buy the cheapest permitted oils available to keep the prices of their products low.

According to the Vanaspati Manufacturers' Association of India, the estimated output of vanaspati in October-March (1976-77) will be about 330,000 tonnes and in April-September (1976-77) 270,000 tonnes. The estimate of demand for permitted oils other than groundnut corresponding to an output of 600,000 tonnes of vanaspati is around 630,000 tonnes as shown in the Table II.

The Association expects a huge gap of 440,000 tonnes of oils to be met by imports and the use of groundnut oil. As the State Trading Corporation (STC) is responsible for the import of edible oils, it will have to buy sufficient oil in foreign markets and in proper time for the use of the mills. Nearly 50 per cent of the oil will have to be moved to factories in north India, which

will require effective coordination with the railways too. The STC should build up a reserve stock in all its depots to ensure quick deliveries to factories and save itself from price fluctuations.

In order to avoid the recurrence of this year's experience, when despite a bumper groundnut crop the prices of certain edible oils increased rapidly,

the union government has proposed a national plan for oilseeds. The plan has been proposed as an annual exercise taking into consideration the production prospects of various oilseeds, the prices to be ensured to agriculturists, the anticipated requirements of the next twelve months, the pattern of these requirements, the likely exportable surpluses of high-priced oils against

TABLE I
Availability of Edible Oils

	('000 tonnes)		
	1973-74	1974-75	1975-76
Groundnut oil	13.60	12.00	16.25
Mustard oil	4.72	6.00	5.43
Sesame oil	1.46	1.22	1.40
Coconut oil	1.50	1.80	1.50
Washed cotton seed oil	1.50	2.20	1.50
Niger oil	0.37	0.40	0.50
Linseed oil	1.36	1.44	1.97
Sunflower, soyabean, muhwa, edible rice bran and watermelon	0.15	0.15	0.20
Safflower oil	0.47	0.50	0.50
Total	25.13	25.71	29.25

TABLE II
Estimated Demand for Oil: 1976-77

	October/ March (Tonnes)	April/ September (Tonnes)	Total (Tonnes)
Oils required (105%)	346,500	283,500	630,000
Cottonseed oil	60,000	65,000	125,000
Sesame oil	25,000	10,000	35,000
Kardi oil	3,000	5,000	8,000
Soybean/sunflower, maize, etc. oils	15,000	5,000	20,000
Sub Total	103,000	85,000	188,000
Gap to be filled with imported and groundnut oils	243,500	198,500	442,000
Total	346,500	283,500	630,000

which low-priced oils may be imported and such other relevant factors. The export and import programmes also have to be realistically drawn up. The various interests concerned have to be associated with this exercise.

As the main reason for the rise in prices was an overall short supply of edible oils in the country, the proposed national plan has to assume payments of remunerative prices to growers. Since the land for cultivation of oilseeds is limited by the overriding demand for cereals, any further extension in production has to come from the maximisation of yields by developing various agronomic yield techniques for different soils and climates. New oilseed crops have to be introduced and cropping sea-

sons have to be varied to enable water to be provided at critical moments for maximum yield.

The overwhelming importance assumed by groundnut has to be changed and other crops have to be developed. For instance, sunflower of the Russian variety holds great promise as it has an oil content of 45 to 50 per cent. Moreover, the quality of this oil is considered good, having 60 per cent poly-unsaturated fatty acids. The crop is of a short duration of 90 days and can be grown at any time of the year in irrigated or dryland. Sunflower crop was introduced in this country in 1968-69 and by 1972 the area covered was about 80,000 hectares. The fifth Plan target was 930,000 hectares. The National Com-

TABLE III
Oil Used by the Vanaspathi Industry

	1972	1973	1974	1975	1976* Jan-Se
Groundnut oil	357,608	135,058	115,406	144,096	178,16
Percentage	57.22	27.39	30.64	30.00	43.00
Sesame oil	41,097	36,302	30,424	40,772	32,4
Cottonseed oil	135,293	153,590	136,864	217,325	107,32
Percentage	21.65	31.15	36.34	48.00	26.00
Sunflower oil	—	1,787	5,164	7,480	4,07
Ricebran oil	—	935	1,170	3,901	1,72
Kardi oil	15,405	5,771	2,709	9,850	9,41
Rape/Mustard oil	—	51,639	—	—	—
Nigerseed oil	—	937	2,545	4,442	4,54
Soyabean oil	—	315	868	4,723	4,55
Maize oil	—	53	318	401	1,58
Imported oil	75,549	106,748	81,447	51,136	72,05
Total	624,952	493,135	376,615	484,286	415,90

*Non-members Jan-June figures only.

mission on Agriculture has recommended a target of two million hectares for this crop. The cultivation of safflower (Kardi) also has considerable potential because it can be sown in rain fed as well as irrigated conditions and its quality is rated high because of a high poly-unsaturated fatty acid content.

Soyabean, a pulse crop, is also rich in oil content. The snag in its cultivation is the high cost of the seed as well as high seed rate required per hectare. This can well be borne, provided the protein content of the crop is fully utilised and better use made for the resultant meal. The government has been encouraging the cultivation of soyabean, and has provided subsidy on its cost of seed and fertilisers.

The encouragement provided by the government for crushing of cottonseed for the manufacture of cottonseed oil has not been very successful as

only 30 per cent of the quantity is available for that purpose the rest is fed directly to the livestock. Similarly almost the whole of rice bran goes in feeding the cattle notwithstanding all the incentives given by the government for its conversion into oil. The difficulty in the case of both these sources of oils is the lack of extension work. The farmer need to be educated in the economics of extraction of oil. The Khadi and Village Industries Commission has been making efforts since 1958 to encourage the establishment of village ghanis from the point of view of employment but with little success.

The government has also been thinking in terms of having some captive vanaspathi manufacturing units, the production from which can be used for distribution in the scarcity pockets in the country as well as for having an effective control over the distribution channels.

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- Saved over Rs. 12 million in foreign exchange in 1975-76 by indigenous production of Axle Oils for the Railways.



- Earned Rs. 30 million in foreign exchange by exporting 35,000 tonnes of Special Grade Asphalt.



- Rs. 8 million annual saving in own fuel consumption by efficient energy management, and in consumption of water and chemicals.

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- Shop Floor Committees and various task forces operate at different levels to encourage workers' participation. Safety and Suggestion Awards, Service Awards introduced.



- For encouraging Family Planning, incentives were substantially improved.

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buyers' market

It is in respect of rubber that a sellers' market has disappeared and for the first time in several years the disposal of natural rubber is posing a problem. Apart from displacing completely imports of natural and synthetic rubber, except for a few special varieties of the latter, the Indian Rubber Board has felt compelled to export limited quan-

ties of the natural variety in order to relieve glut in the home market and secure at least the floor prices for growers. There is no fear of rubber shortage for several years and the expanded capacity of the tyre industry can be fully used without any shortage of the principal raw materials. Export trade in rubber products can be increased sizably.

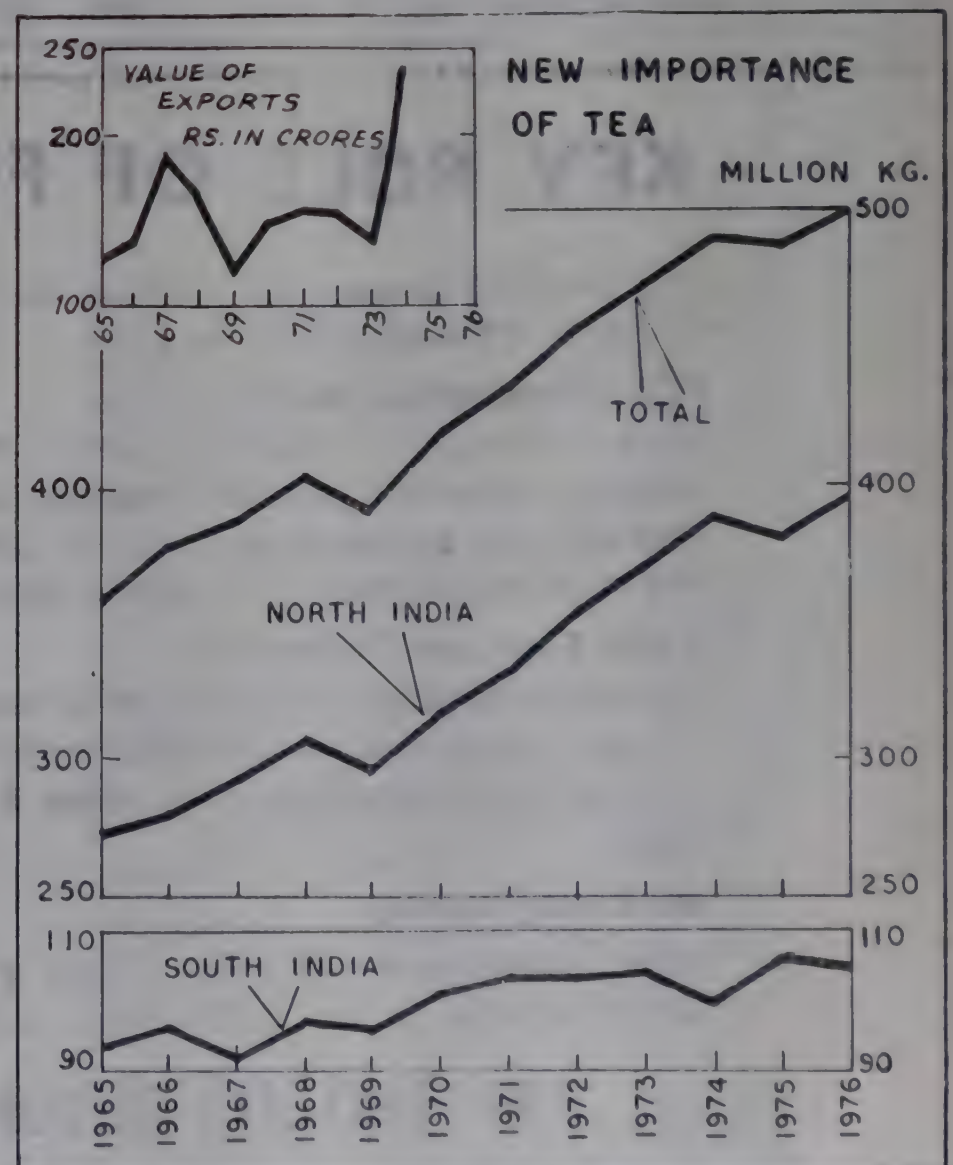
useful role

Other plantation products too are playing a highly useful role and the export potential is such that they deserve to be developed on a systematic and defined basis on the lines of the three major plantation industries. The export earnings from all sources may easily be Rs 500 crores in 1976-77, against only Rs 275 crores in 1970-71. The net foreign exchange earnings too have more than doubled as it is no longer necessary to incur foreign exchange expenditure on imports of rubber which were at one stage costing even Rs 20 crores annually. The industry is now actually making a contribution to foreign exchange earning of over Rs 10 crores signifying a net improvement of Rs 30 crores from the point of view of the balance of payment position. Only in regard to cashew there is dependence on imports which can and should be eliminated over a period. With potentialities for further growth in exports and the new efforts to secure higher unit values for different products,

the increase in foreign exchange earning can be even more pronounced than in the last two years.

An attempt has been made in this article to highlight the impressive progress made in several directions in the past decade and emphasise the relative importance of different plantation products. It is a matter of gratification that in spite of a prolonged period of transition from foreign to Indian ownership and the relatively unattractive and hazardous character of plantation cultivation in early years, Indian entrepreneurship has

met successfully the challenges of a new situation. The earlier criticism that the transfer of ownership to Indian from British and other interests had damaged the health of the estates due to the lack of proper expertise or care in tending plantations is no longer valid. The level of productivity has considerably increased in all the three major industries and the remaining dominant ownership in some sectors can be safely and surely diluted for avoiding the continuing drain of remittances in the shape of dividends and profits particularly by tea estates and also



the manipulations in prices that have taken place at the auctions in overseas markets or due to the activities of major consumers. The process of consolidation and improving productivity of existing estates engaged in the cultivation of different products is being successfully completed and the new opportunities for improving both the volume and value of exports have to be fully exploited.

Tea Looking Up

Tea plantations accounted for the largest investment by foreign interests in the early decades of the century. The predominantly British character in some regions has slowly disappeared with the reconstitution of erstwhile managing agency houses and negotiated transfers. The large foreign element in some directions will gradually be diluted in the next few years with increasing

participation by Indian investors. The changes in ownership and management have been so successfully introduced that the industry is now in a position to take new onerous responsibilities.

The last two years perhaps mark the beginning of a new era of dynamic progress as after a long period of stagnation when exports were fetching around Rs 140 crores annually, the tea industry has held out the prospect of these earnings being more than doubled in the coming years. Even in 1975-76 the unit value increased sharply with a better demand for tea all over the world and successful efforts to realise higher prices. The quantum shipped was not very much higher at 223.40 million kg in 1975-76 as compared to 209.36 kg in 1965. But the value was much higher at Rs 240 crores as compared to Rs 114 crores in 1965. The

more than doubling of unit value should not cause surprise to anyone as there has been a big increase in prices for all commodities the world over. In respect of tea, however, the prominent buyers succeeded in keeping down the prices and even in 1973-74 foreign exchange earnings were only Rs 114.84 crores with the quantum at 190.3 million kg.

The realisation of higher prices could be ascribed mainly to the commodity boom following the hike in oil prices and a keener awareness of the scope for raising prices in order to offset the adverse effects of world inflation. The absence of any increase in global output in the last two years has also helped this country to ship larger quantity as well as to secure higher average price. In 1976-77 the value of exports may be easily Rs 270 crores with the quan-

tum at 230 million kg. Even allowing for the larger requirements of the domestic market

While the value of exports has risen significantly in the past three years it is noteworthy that India's share in world trade has been shrinking as East African countries and other regions have benefited mainly by the expansion of the world trade by 75 million kg in a decade. The performance of India in relation to Sri Lanka might be considered satisfactory as the latter's exports have actually shrunk over a period even allowing for the great dependence of that country on export earnings through tea. The lack of enthusiasm to promote exports of Indian teas until recently might have been due to stagnation in world prices. There has actually been a steady rise in production from 1965 to 1976 to 500 million

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kg from 366 million kg. The area under tea has increased mainly in Assam and Dooars while there has been a marginal decline in the southern region. However, the increase in a production by nearly 134 million kg. in eleven years in 1976 has been mainly brought about by the increase in productivity. Assam alone has accounted for more than 50 per cent of the increase in output. The increase in area was only about 10 per cent.

In the southern region the yield has risen by 70 million kg as compared to 1965 while there has even been a marginal decline in the area under cultivation. It has to be examined scientifically how the techniques adopted by some estates for achieving the highest yields per acre in the world can be profitably pursued in other estates. Also, the scope for extending the area advantageously in contiguous regions should be fully exploited. There may also be helpful mergers and suitable machinery for the transfer of technology to those less well-placed. With a new approach to the outstanding issues arising out of a changing situation, India's supremacy in the world map in the tea industry can be safely retained and lead over others even improved.

internal consumption

The increase in output by 134 million kg in 11 years has helped in usefully meeting the requirements of the domestic market, implying that the annual growth in internal consumption has been on an average 12 million kg. It can be expected that the rate of growth will be faster in the next two and a half decades and it will be safe to assume that internal demand alone will increase by

400 million kg by 2000 AD taking the total of consumption to 664 million kg. As exports too may be higher at 350 million kg the proposed target of 1000 million kg by the end of the century cannot be considered ambitious in any sense.

advance action

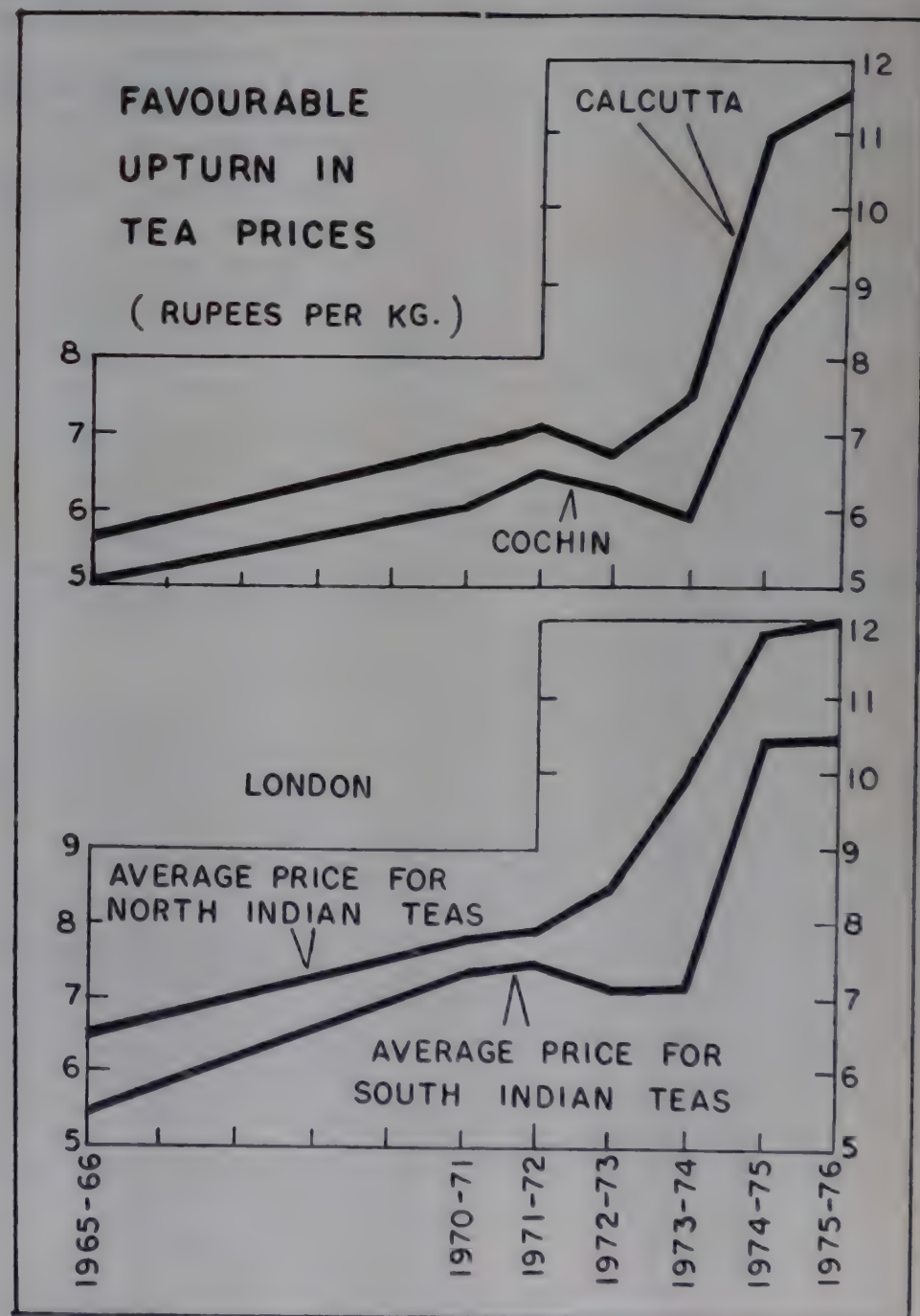
A doubling of current production in 25 years may require an average annual growth of only four per cent in two and a half decades, an average which has been achieved in the past ten years. But difficulties may be experienced in later years if advance action is not initiated for extending the area under the crop and implementing the replantation programme systematically. It is even now reckoned that about 40 per cent of tea bushes are over-aged and there has been no great anxiety on the part of several estate owners to replant the existing acreage as the loss of revenue during the period of gestation cannot be afforded by them. There is besides disinclination to receive lower earnings temporarily even though it is abundantly clear that the outturn of tea after replantation will be much higher than that derived from existing bushes.

The improvement in agricultural practices has enabled a postponement of replanting schemes as higher yields have been secured with greater care of the plants and the use of large doses of inputs. Even now there are many regions where the yields are not quite satisfactory and the smaller estates particularly lack the required expertise and finance. This is reason why many gardens have become sick in north India.

There has also been some

uncertainty on account of compulsory change in ownership or other factors and many entirely foreign owned tea companies have to dilute the ownership of equity capital with a view to increasing Indian participation to the required extent. Some sales of sterling tea companies have already taken place while arrangements are under way for converting these companies into rupee companies with the required Indian participation. Once the adjustment to the new situation arising out of the administration of the Foreign Exchange Regulation Act has been completed, it can be expected that the increase in the tea output will take place at the required rate.

The central government is seized of the importance of nursing back to normal health sick tea gardens and providing also the required incentives for improving the yield per acre and implementing replantation schemes. There has been no anxiety on its part to take over sick gardens and these are proposed to be administered by competent new managements. The assurance has also been given that there will be no nationalisation of tea gardens while the land ceiling laws also may be sympathetically administered. Some state governments however have not been agreeable to the suggestion that reserve land adjoining existing estates should not be taken up and the concerned



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- ★ Egg Powder Plant;
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managements should be allowed to extend the area under tea or other crop.

There is even a disposition on the part of some estates too to promote tea cultivation in new areas under different auspices and also encourage cooperation in plantations, the facilities needed by the smaller estates for processing green teas and marketing finished products are also to be provided with the promotion of new factories and the creation of marketing organisations.

right steps

These steps are indeed in the right direction and as Mr Jagjivan Ram, union minister for Agriculture, observed at a seminar held in the capital recently to consider the problems of plantation industries, the improved trading conditions in the world markets and an expanding domestic market should enable tea gardens to obtain remunerative prices and earn a reasonable return on fresh investment. Unlike in the case of other industries the finance required for replantation schemes can be easily found and the generation of larger internal resources should also facilitate the execution of these schemes. It is, however, necessary to have uniformity in taxation of the agricultural portion of the incomes of the tea industries. It has also been emphasised that the development allowance is not adequate and depreciation in respect of field assets should be granted before determining assessable incomes. The anomalies in respect of the drawback of excise duties have also to be removed.

The assurance was given to the planters when government spokesmen addressed the plantation interests at the annual

meetings of their associations in recent months that the importance of tea as an export earner has been recognised and the authorities will make every effort to reduce the burden of taxation wherever it was regressive. The planters for their part have been carrying out research work and helping also the smaller growers to overcoming their problems. If the new climate can be helpful in improving productivity and profitability of the tea industry and the Indian Tea Board, along with the Agricultural Refinance Corporation, can assume greater responsibilities for providing development finance and guidance, the tea industry can strike out a new path and rise to greater heights in the 'eighties. The immediate outlook has never been so encouraging as it is now.

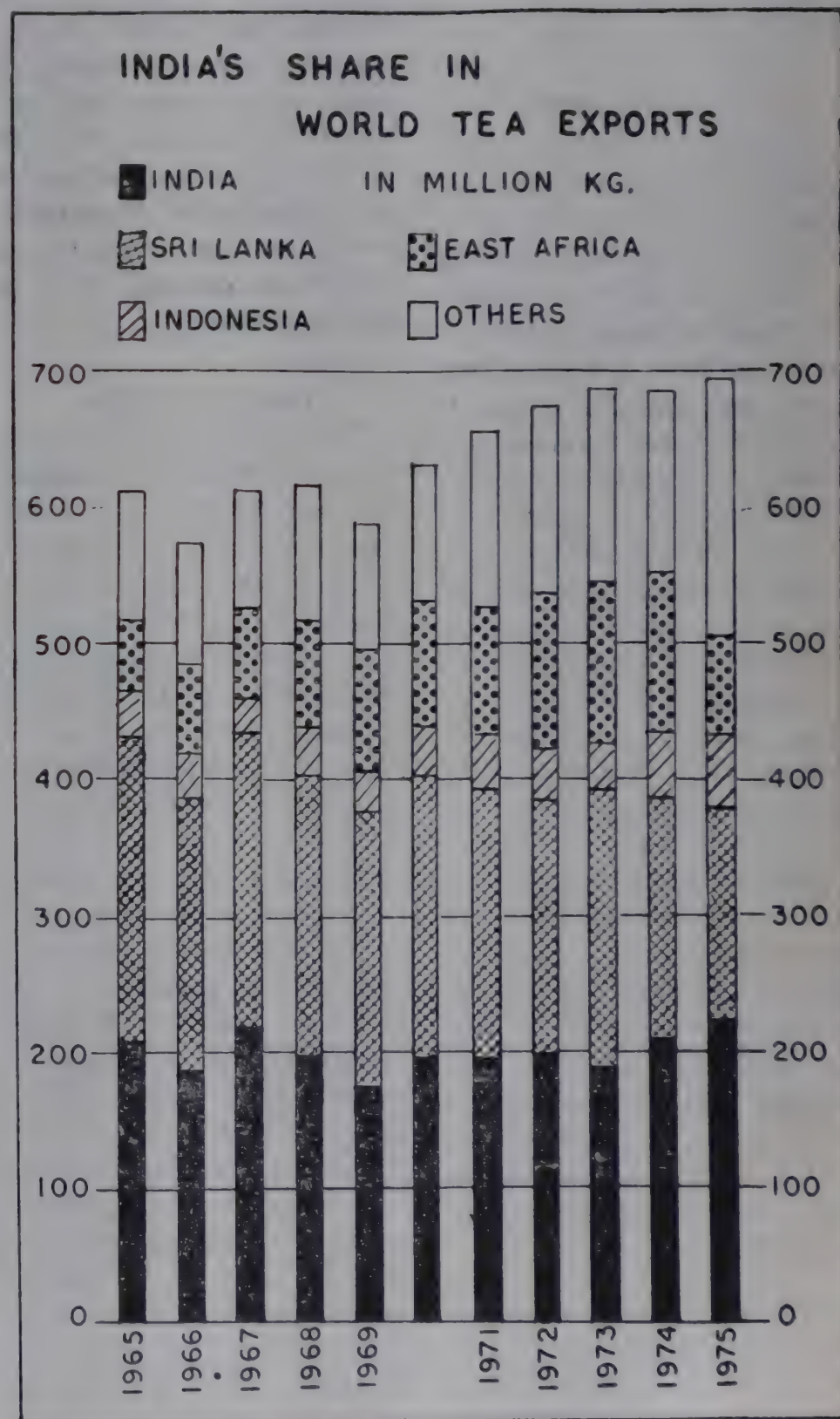
Boom in Coffee

Coffee estate owners would not have expected in their fondest dreams that a shortage of this plantation product in international market would send its prices skyrocketing and India could export sizable quantity at highly remunerative prices. The difficulty, if anything, in 1976-77 has been to find the required quantities for meeting the export demand. The popularity of Indian coffee and the shortage of different varieties on account of a sharp decline in the output of Brazil and lower exports from Angola and Guatemala for different reasons have been such that export prices are nearly two and half times the internal prices and the central government has even thought it possible to levy a stiff export duty of Rs 13,000 per tonne against only Rs 3,000 per tonne previously. Even the latter level of duty came into being after it was raised from

Rs 500 per tonne in February 1976.

The policy of the government in levying a heavy export duty on a regressive basis is not clear as internal prices have been kept down through regulated releases by Indian Coffee Board at the auctions in several centres in the country and exports also have been effected on a staggered basis. It has even been decided to export only 48,000 tonnes out of 1975-76 crop which was short by over 5000 tonnes over the

earlier estimate due to unfavourable weather conditions. The carryover stocks from the previous season have of course been drawn upon liberally and awkward rises in internal prices have been avoided only because of regular releases and subsidized sales of powder through different depots of the Coffee Board. The quantum of exports in the current financial year, however, can still be 55,000 tonnes as the 1976-77 crop is estimated to be quite good at one lakh tonnes.



It could not have been expected in the early sixties that coffee would assume a major role as foreign exchange earner and Indian varieties would become extremely popular in many countries. Even before the current boom in world prices, the quantity exported was in excess of internal consumption and it became increasingly clear that there would have to be a big rise in output in order to meet not only the growing needs of the domestic market but also the requirements of overseas consumers.

record export

The record in respect of the quantity exported was established in 1975-76 with shipments of 59,386 tonnes having a value of Rs 66.65 crores. The quantity shipped in 1976-77 so far has been quite gratifying and a new record in respect of foreign exchange earnings may be achieved. As a result, however of a shortfall in production in the 1975-76 season only 48,000 tonnes could be utilised for export purposes as stated above and shipments had to be staggered in order to conserve available supplies for meeting the needs of the domestic market before the arrival of the new crop. Luckily, it has been estimated that the yield of this crop will be around one lakh tonnes in spite of the prevalence of unfavourable weather conditions. At one stage, it was even anticipated that the output would be in excess of 1.10 lakh tonnes and it would be possible to take full advantage of the world boom.

The quantum of exports in 1976-77 (financial year) may still be 55,000 tonnes as earlier receipts out of the new crop into the pool may be used in

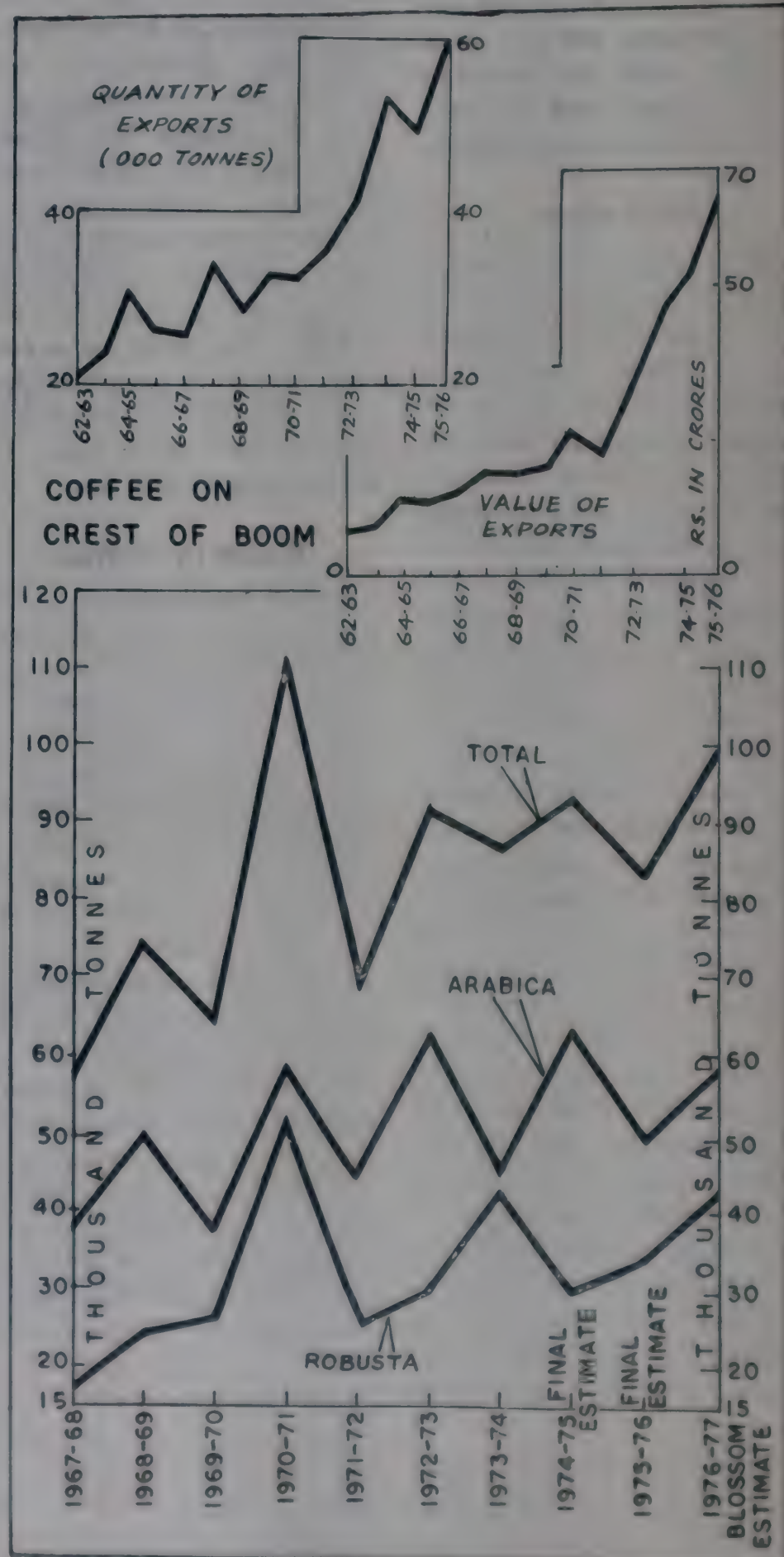
good measure for this purpose. As there has been a big rise in export prices since the middle of this year the unit value may be such as to enable the Indian Coffee Board to earn foreign exchange for even Rs 100 crores. This is in strong contrast with a meagre total of Rs 7.61 crores for 1962-63 when 20,416 tonnes were exported. The shipments have thus nearly trebled in a little over a decade while the value has risen by over 13 times in the same period. Even allowing for the exceptional world shortage which has been responsible for a skyrocketing of prices, the unit value had risen by more than three times in 1973-74 indicating that coffee was faring better than tea in world trade and even without a boom the quantity could be steadily increased.

bumper profits

The realisation of highly remunerative prices on export sale has helped the coffee estates to secure bumper profits and overcome easily the adverse effects of higher cultivation costs even after meeting the requirements of the domestic consumers at reasonable prices. It must be said to the credit of the Indian Coffee Board that internal prices have been kept at reasonable levels and no attempt has been made by traders also to exploit temporary shortages. The central government too has been quick to utilise the opportunity for augmenting its revenues by revising the export duty on coffee steeply on two occasions. The duty is levied uniformly on all varieties of coffee. It was first increased in February 1976 to Rs 3,000 per tonne from Rs 500 per tonne. On October 26, 1976, there was an abrupt rise in this duty to Rs 13,000 per tonne from Rs 3,000 per tonne.

With the prevailing price of around Rs 29,000 per tonne in world markets (November 25, 1976) the levy of an export duty of Rs 13,000 per tonne works out to more than 80 per cent of the net price realised by the Indian exporter. Prior to the big rise in the export duty, the price fetched for plantation 'A' at the export auctions was

around Rs 21,000 per tonne. As world prices were ranging between Rs 27,000-29,000 per tonne, the exporters also were having a good margin as the duty element was only Rs 3,000 per tonne. The situation has however now changed completely and the estate owners are feeling apprehensive about the regressive effect of a heavy



slab if world prices tended to decline from the exceptional levels.

No reliable estimates are available about the yield of the Brazil crop though it has been reported that the world's largest exporter may not ship more than 11 million bags out of the new crop against 18 million bags usually. Other important exporters like Guatemala and Angola may try to take advantage of the valuable opportunity for maximising their foreign exchange earnings. It is not, however, expected that the shortfall in exports of Brazil can be made good by increasing shipments from other directions and world prices may remain high for quite some time.

It is, however, feared by Indian producers that the net price realised by them on exports may be even lower than

those obtained at the internal auctions if there is a decline in world prices to the levels recorded in June 1976. The prices prevailing then were no doubt high. But even after paying an export duty of Rs 3,000 per tonne the net price was much higher than the rates secured at the internal auctions. Therefore with the possibility of much lower average prices being realised on export the industry may not be in a position to earn reasonable profits in a season of near record yield.

The state governments concerned too are not feeling quite happy as unlike in the case of other export duties the siphoning away of a good chunk of export prices in the shape of a heavy duty will result in the denial of large amounts to taxes on profits to the state governments. The

slab rates of agricultural income tax are very high in Karnataka particularly and it has been complained by the managements of the bigger estates that the incidence of agricultural income tax has been even heavier than corporate taxes levied by the centre and in view of vagaries of agricultural operations there should be a reduction in the tax rates.

The representations in this regard have not so far resulted in any tangible reduction in these rates. It has also been emphasised that depreciation on field assets should be allowed before reckoning profits for assessment purposes and liberal assistance should also be given for replanting existing area under coffee besides extending the area under the crop. It is only to be expected that the various aspects of the outstand-

ing problems will be carefully considered and the central exchequer will be agreeable to a sizable reduction in the export duty besides giving some share of the proceeds to the main producing states. The finance required for rehabilitation and development of new areas will not be large being estimated at not more than Rs 50 crores in the next ten years.

The Coffee Board has no doubt been keen on extending coffee cultivation in Andhra Pradesh and even in north-east India. However, no significant progress has been made so far in this direction and the bulk of the output is accounted for by Karnataka, Tamil Nadu and Kerala. Karnataka of course is producing nearly 75 per cent of total output. Serious efforts will have to be made for ensuring a regular increase

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production in the coming years as there are no signs of the earlier tempo being maintained.

After the previous record of an output of 1.10 lakh tonnes in 1970-71 the one lakh tonne mark may again be surpassed only in 1976-77. In 1967-68 the output was 57,331 tonnes. It will therefore be clear that the upward trend can be resumed vigorously only if the small growers are helped to raise the yield from the existing area apart from implementing replantation programme. There will also have to be an increase in area under the crop as the replantation programme should not result in a net reduction in yield in any particular season.

better techniques

With small growers accounting for over 40 percent of current production and their yields being only 60 per cent of those achieved by the bigger states, given the adoption of better cultivation techniques, the output can be increased by 10 per cent in a short period from the same area under favourable conditions. There will also have to be simultaneously an increase in acreage so that the output can be doubled to two lakh tonnes in the next decade.

If exports can be raised to one lakh tonnes over a period with the required increase in internal production, coffee exports may secure for the country what tea did not long ago, even with the prevalence of normal conditions in world trade. The valuable opportunity for developing the coffee industry on an export oriented basis should not therefore be missed and the central and state governments should provide the necessary facilities

to the Indian Coffee Board to discharge its new responsibilities.

Rubber Products

A near trebling of the output of rubber in a decade and the emergence of a export surplus could not have been visualised even four years ago as the thinking in government and industrial circles was inclined towards the development of synthetic rubber based on industrial alcohol or naphtha. Indeed, it was so strongly felt in the early sixties that there would be a continuing snowballing of shortage of natural rubber that it was considered advisable to undertake the manufacture of synthetic rubber based on industrial alcohol. It cannot be denied that the output of the only plant for producing synthetic rubber is helping to fill the gap in indigenous availability of rubber. It is even cheaper to some extent than natural rubber. But the difference is not large and bearing in mind the immense scope for generating additional employment and producing rubber on a regenerating basis, the emphasis has latterly been on maximising the production of natural rubber.

rising production

The new plants for manufacturing synthetic rubber based on petrochemical roots have therefore been cold-shouldered and there is no fear of any shortage emerging. Natural rubber production has been rising on an average of 14 per cent annually while the existing synthetic rubber plant can contribute easily an additional 10,000 tonnes yearly with adequate supply of industrial alcohol and the implementation of a modest expansion programme.

The output of natural rubber

was only 50,530 tonnes against consumption of 63,765 tonnes. The deficit had to be made good with the imports of natural and synthetic rubber. By 1970, the output had nearly doubled to 92,171 tonnes and the industry could meet fully the needs of major consumers. The demand, however, would have been on a larger scale but for the fact that available capacity could not be fully utilised due to labour shortage and other factors. Actually there was an unsatisfied demand for tyres and tubes and marginal imports have to be permitted.

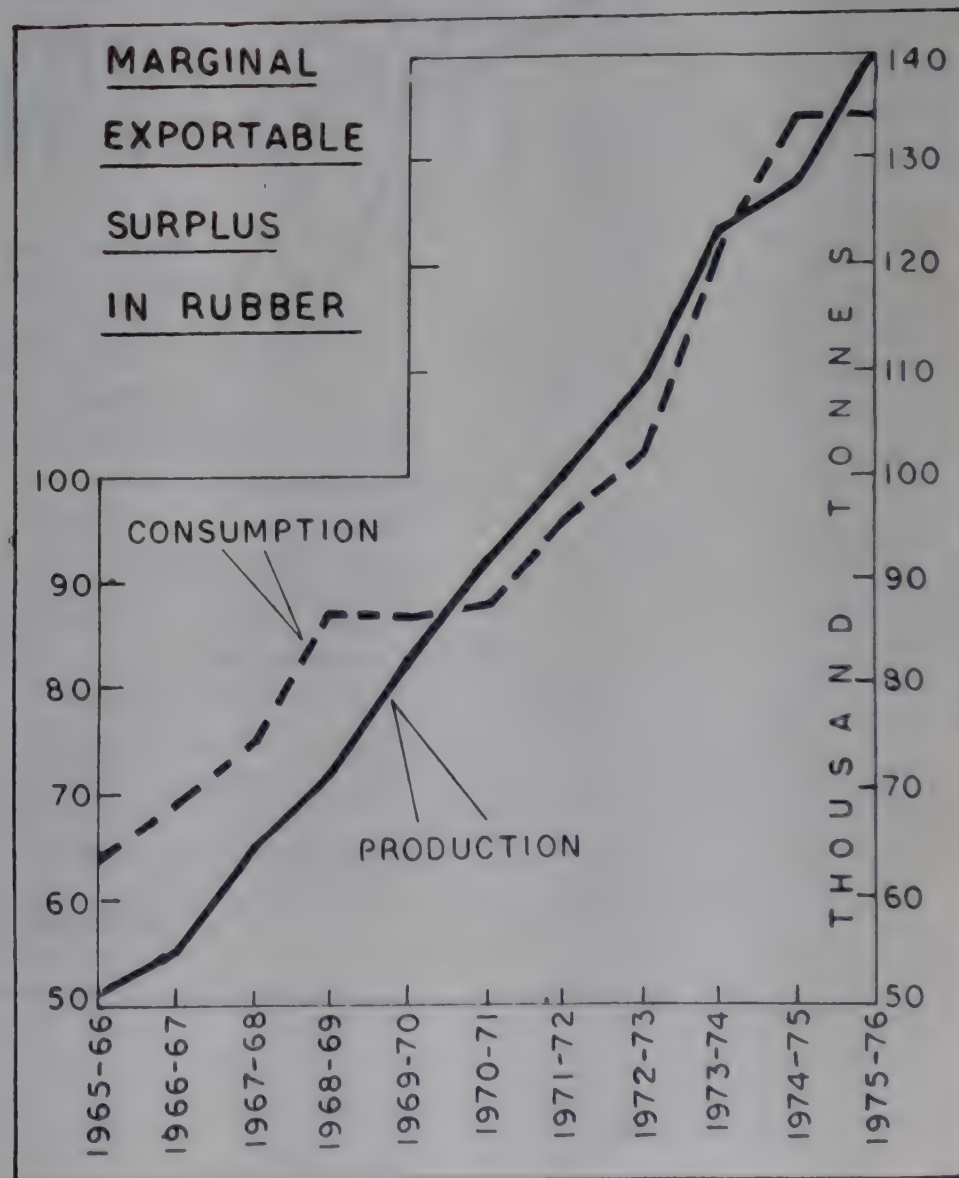
The oil crisis, however, has retarded the growth in consumption of rubber of different types and even with an improved power situation and enlarged capacity, the tyre

industry is not in a position to raise output substantially.

The future of the transport industry, is however, bright as there will have to be an increase in the number of commercial vehicles employed for handling a larger volume of traffic. The prospect of raising output of oil substantially from the on-shore and off-shore areas may enable a significant relaxation, of restrictions on consumption of petroleum products, with a lowering of excise duties.

Immediately, however, there is the problem of marketing remuneratively natural rubber output and unlike in the tea and coffee industries the growers are unable even to secure the minimum price fixed by the government.

These growers were in a





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position to demand high prices two or three years ago. With a surplus of over 15,000 tonnes in excess of internal needs and the difficulties involved in maintaining large buffer stocks, the State Trading Corporation undertook exports on an experimental basis even though a subsidy element was involved. These limited exports did not relieve the glut of rubber and it was recently decided that the growers can conclude contracts directly though the shipments will have to be canalised through the STC. With recovering world prices no large subsidy is now involved in exports.

larger exports

The immediate difficulties can be overcome with larger exports of rubber, even on a subsidised basis, though the better course would be to encourage exports of tyres and rubber goods as a considerably higher value can be secured on shipments thereby. These problems can be sorted out without any difficulty with a helpful understanding by the government of the issues involved. It is important, however, that a special effort should be made to increase productivity and reduce the cost of rubber. Even with a more than trebling of prices in the past decade there is a demand that the floor prices should be raised. This question has been under consideration of the government for some time past and no decision has been taken about an upward revision of floor prices as this would involve the evolution of a long term policy and corresponding adjustments in the structure of excise duties on finished products or incentives for exports. While there may be justification for the demand from growers for

higher floor prices, there cannot be any wide disparity between world and internal prices.

The productivity of the rubber estates can be increased with vigorous implementation of replantation schemes by small growers particularly and the introduction of high yielding clones. Eventually slightly higher floor prices may become inevitable in the context of continuing escalation of cost and increase in wages for workers. But the rise in cost can be contained and natural rubber enabled to play an important role now as the main supplier of raw material for the tyre industry. The present confused outlook for rubber should not be allowed to have a misleading effect and it should be the objective to maintain the annual growth rate of 14 per cent so that any pronounced rise in output of tyres and rubber goods after three or four years does not give rise to scarcities of rubber, albeit marginally, as was noticed some time back.

valuable contributors

Apart from the major plantation products, cashew, pepper, cardamom and few other items are making valuable contributions to export earnings. There has, however, been no serious attempt to improve the cultivation of these products in spite of the fact that a substantial portion of indigenous production is intended for export. The cashew industry alone is earning for the country a net amount of Rs 80 crores in foreign exchange and imports of raw kernel are proving to be helpful in adding to the value of shipments and feeding the many small sized processing units. There is a

danger of imports not being available in the required quantities as the east African countries are making arrangements for processing raw nuts. Some efforts have been made in recent years in Tamil Nadu, Andhra Pradesh and Kerala to extend cashew cultivation. But no significant progress has been made and it will pay good dividends to develop this industry systematically. It is highly important that there should be a big increase in internal production of cashew nuts as any increase in domestic demand may affect exportable surplus and therefore earnings.

static output

The output of pepper too has remained static and the world prices have fluctuated in wide limits. Even so the contribution of this plantation product which is mainly grown on a cottage industry basis is sizable and export promotion council should devote greater attention to the extension of cultivation of pepper, in suitable regions. As regards cardamom, not much headway has been made, because of the proneness of the crop to be affected by diseases. Some successful experiments have been carried out latterly by the Cardamom Board to overcome these difficulties and increase output substantially. The output of this product has remained static as in the case of pepper in the past decade. As some varieties of Indian cardamom are highly popular in world markets, the export earnings can be doubled in a short period.

It will be clear from the foregoing that there is not much appreciation of the silent revolution that is taking place in the organised sector

of the agricultural economy and the new efforts being made to increase the unit value of exports through better marketing arrangements, joint propaganda, blending of teas, packeting and manufacturing of instant tea and coffee and other items. Experimental efforts have also been recently made to cultivate cocoa in selected areas and results obtained augur well for the future.

What is, however, important is the conclusion of arrangements for systematic dissemination of the results of research work and a fuller understanding of the advantages of the use of modern cultivation techniques. As stated earlier, the statutorily formed boards for different industries and the organisations representing the estate owners have been doing useful work though it is only latterly that there has been better appreciation of the need for developing simultaneously productivity of the bigger and smaller units which constitute a fairly large percentage of the three major industries. There is also sizable proprietorial interest in the ownership of plantations and either due to disinclination to adopt progressive measures or inability to find the required resources, the desired progress has not been made so far.

requisite facilities

The statutorily constituted boards, employers' organisations, the Agricultural Refinance Corporation and commercial banks are aware of the need for making available to various plantation industries the requisite facilities for improving productivity and implementing massive replantation programmes. Several committees have examined the question of providing the necessary incentives for deve-

lopment and replantation and concessions have been granted to the tea industry by way of development allowance, larger replantation subsidies for the tea, coffee and rubber industry and depreciation on field assets for the rubber estates. But other recommendations of many export committees still remain to be implemented and the pleas for depreciation of field assets of tea estates, a more scientific structure of agricultural income tax for coffee industry, particularly in Karnataka and larger subsidies for replantation schemes and the like have yet to be considered.

The central government is no doubt aware of the need for granting relief and helping the enterprising managements to discharge their new responsibilities successfully. The state governments have to show a greater awareness of

the problems of plantations. There should be no uncertainty about land laws and indiscriminate acquisition of reserve areas of bigger estates is likely to be more harmful than beneficial. Where the reserve areas are not properly utilised by the existing owners and new talent is forthcoming to develop these areas, the reallocation of these areas to the latter after payment of adequate compensation to the previous owners will be helpful in broadbasing the industry.

However, there is necessity for a uniform policy in this regard as several states have pulled in opposite directions. There should also be no undue anxiety to secure for the central and state exchequers large revenues through heavy excise and export duties, besides one-rous rates of agricultural income tax. It has so happened

that the incidence of agricultural income tax in some regions is even heavier than the impact of corporate taxes levied by the centre. Also, the imposition of an inordinately high import duty, as in the case of coffee has resulted in the denial of windfall revenues to the state governments and there may well be a demand from the latter that they should be compensated for the loss of revenue with a share in the proceeds of export duties.

The plantation interests have to be given necessary encouragement as their social obligations have increased considerably and it is necessary to provide proper amenities to workers. Their wages also have been regularly raised to ensure minimum standards of living while the cost of agricultural inputs has risen sharply. It is no longer possible to keep

down prices at low levels a steep rise in them can be avoided only if the maximum emphasis is laid on improving productivity and helping enterprising estate managements to adopt intelligent blending of tea and coffee improving the quality of products.

The value realised on export and internal sales can in some cases be much higher than in the past and the drain of foreign exchange in some directions is taking place as a result of re-export by some prominent importing countries can be considerably minimised. There is a vast scope for future strides in progress in this sector of the agricultural economy should therefore be fully exploited. An outlay of Rs 150 crores on replantation schemes, creation of processing facilities and extension of acreage will yield rich dividends in a decade.

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Paper and its problems

L. N. Raina

PAPER industry currently passing through a difficult period with mounting inventories caused by a recession in demand. Surely, this is a passing phase and with the expected expansion in education and with the progress of industrialisation, demand for paper and paper board as well as newsprint is bound to increase phenomenally and the country has got to be prepared to face the test it is taken unawares.

The paper and paper boards industry is marked by three distinct characteristics:

(i) Paper is a mass consumption item with a growth potential variously estimated at five to seven per cent per annum; (ii) it is a capital-intensive industry requiring as much as Rs. 9,000 for the setting up of one tonne of annual production capacity; (iii) its raw material, wood, which requires a long period for regeneration, is fast becoming scarce with more emphasis being placed so far on exploitation of the existing resources than on plantation of new forests which could cater to the future expanding requirements of this industry.

Increasing demand

With increasing literacy and educational facilities, the demand for cultural paper is ever increasing though not on the scale anticipated or desired. The developments in the field of packaging influence the demand for industrial papers. Paper products are invading many of the markets formerly held by wood. Extensive use is being made of corrugated paper boards for packaging. No doubt, at the same time, it is closing ground to plastics

and aluminium foil where rigidity is not needed. Polyethylene is making headway at the expense of paper.

The demand for paper is responsive to income growth. It is noteworthy that the income elasticity of consumption of paper till lately had gone up despite the fact that per capita income has not risen markedly in successive Plan periods. This is a pertinent indicator of its future level of consumption.

percentage decline

Over a period it has been observed that demand for cultural paper, which forms the bulk of demand, has tended to decline in percentage terms. On the other hand, the demand for speciality papers and newsprint is on the increase.

The demand for paper and paper boards by the end of the fifth Plan period was estimated by the task force on paper and pulp set up by the Planning Commission at 1.33 million tonnes annually, needing a production capacity of 1.5 million tonnes. As against this target recommended by the task force, the fifth Plan has opted for a capacity of 1.4 million tonnes and a production of 1.2 million tonnes. The target was lowered keeping in view the financial constraints and also a revised assessment of the capacity that is expected to fructify during the fifth Plan period.

At the end of June 1976 there were 75 paper and paper board mills working in the country with a manufacturing capacity of 1.14 million tonnes. In addition there were three units manufacturing rayon grade

pulp, one producing paper grade pulp and two felt-making mills. There is also the lone newsprint manufacturing unit at Nepanagar. During 1976 an additional capacity of the order of 86,000 tonnes per year was added to the existing capacity. Out of this, a capacity of about 36,000 tonnes per year has already come into regular production. A further capacity of the order of 98,000 tonnes, 1,12,000 tonnes and 1,43,000 tonnes is likely to materialise during 1977, 1978 and 1979, respectively. It means that a total capacity of the order of 1.4 million tonnes per year would easily come into being by the end of the fifth five year Plan. This capacity will be adequate to meet the expected increase in demand of paper and paper boards by that time.

total production

Based on the actual production achieved during January to October, it can be estimated that the total production of all varieties of paper and paper boards during 1976 would be 875,000 tonnes against the target of 900,000 tonnes. The production of paper during 1975 was 8,29,000 tonnes. There was thus a 5.5 per cent increase in the production of paper in 1976 over 1975. It can be expected that the trend of increased production will continue because the existing large paper mills are utilising their capacity fully; additional capacity by way of expansions and new units is also materialising.

The capacity utilisation in the large integrated paper mills during 1976 stood at 84.7 per

cent as compared to 81.6 per cent during 1975. The capacity utilisation in a large number of smaller paper mills, however, did not exceed 50 per cent. In fact some of the small paper mills even closed down because of uneconomic operation. By and large the country at the moment is self-sufficient so far as writing, printing and other ordinary varieties of packaging papers are concerned, though much of newsprint and a few speciality papers are imported.

excellent performance

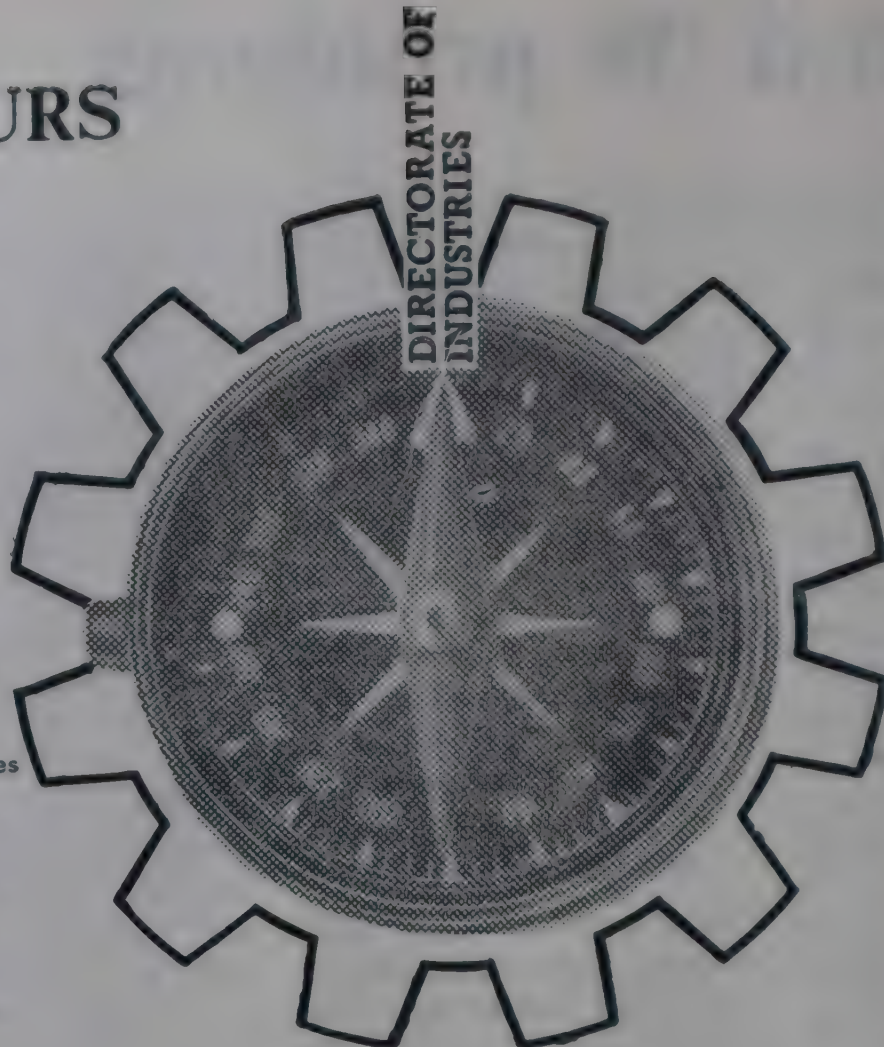
Paper industry gave excellent performance over the years up to 1974-75. According to the Reserve Bank estimate, gross profit as a percentage of net sales in the paper and paper products industry was 24.5 in 1974-75 against 11.4 per cent for 'all industries' (see Table I). Similarly gross profits as a percentage of total net assets in the paper industry was 22.4 in that year as against 12.8 for 'all industries'. Percentage of profit after tax to net worth was equally impressive at 21.2 against 13.7 achieved by 'all industries' in 1974-75. These percentages had been over many years higher for the paper and its products than for 'all industries'.

A study of the working of 22 paper manufacturing companies recently conducted by the Economic Times Research Bureau however indicates that in 1975-76 the rising cost of production, shortages of raw material and difficulties on the power supply front had caused a setback in their working. Although the sales of these

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The chemical wing under the Directorate of Industries & Commerce, Govt. of Tamilnadu, has in its fold testing laboratories to provide all types of testing facilities to Industrialists. Only concessional rates are charged for small scale Industries. The wing also provides technical information on starting and managing industries. Other activities include equitable distribution of scarce raw materials to Small Industries, assistance in importing raw materials for chemical industries, Research and Development work for utilisation of raw materials etc.



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22 companies had improved by 10.1 per cent, the inflationary conditions had resulted in a fall in gross profits by 8.3 per cent. Pretax profits had declined more sharply and were at 13.0 per cent for the year 1975-76. Apart from the reasons cited above for a drop in profitability, one of the reasons was lower utilisation of capacity because of the change in grammage substance in compliance with the paper control order of August 1974. As for production, the current year bids fair to do better.

The problem of increasing prices of raw materials is distorting the growth prospects of the industry. The soaring costs with demand slump is worrying the industry. The cheap and easily accessible resources are fast running out. The industry has now to procure supplies from less accessible sources. As already stated, we have been more interested in pulp mills than in plantations. The country will have before long exhausted its potential of renewable resources. In the long run it is far more economical to plant and harvest than adopt the scorched-earth policy. Royalties should therefore adequately cover the cost of regeneration.

Pulp and paper industry is

subject to economies of scale. It is inexplicable why government should in its wisdom encourage only small-scale units in the paper industry. It is estimated that the fixed investment cost per tonne of production comes down by as much as 52.5 per cent when the size of the mill increases from 25 tonnes per day capacity to 200 tonnes per day. It needs, however, to be borne in mind that the size of the mill also determines the hauling distance of the raw material at site. This would increase with the increase in the size of the mill.

Another determinant of the scale of operation is the size of the market. Large-sized mills are economical for the production of mass grades such as writing and printing paper, kraft paper or newsprint. It is also economical to set up integrated mills for pulping and paper making to produce mass grades. An integrated mill, where the bulk of the fibre is of a simple main pulp grade, brings important reductions in production costs because drying, packing, storage and transport of the pulp are eliminated. By sanctioning limited capacity mills, the cost of paper is bound to increase, thus frustrating the government

policy of making exercise books, text books and writing paper available at cheaper rates to the student community and vulnerable sections of the people.

At one time a plant of 300 tonnes per day capacity was taken as a viable unit in the developed countries. Today a unit producing 750 tonnes per day and above is considered economic. The government should heed the suggestion of the National Council of Applied Economic Research made some years back that at least integrated paper plants of 200-300 tonnes per day capacity should be normal for the country.

As for paper making machinery, the manufacturers in the country are capable of producing small-size, medium size as well as large size plants ranging from 20 tonnes per day capacity to 150/200 tonnes capacity. In 1975 the utilisation of capacity in the paper machinery industry was hardly 55 per cent. The installed capacity in December 1975 was assessed at Rs 35.70 crores at current prices and actual production came to around Rs 20 crores. The decision to allow import of second-hand machinery, taken in 1974, was to obviate the shortage of paper

existing then. In its report on Hindustan Paper Corporation, the Committee on Public Undertakings has asked government to critically examine the advisability of importing second hand machinery not only to encourage indigenous manufacture but also because of the possibility of imported second hand machinery turning out to be incomplete or its substantial parts being nothing more than scrap. The indigenous paper machinery makers are not currently geared to produce plants of above 300 tonnes per day size. Now that the government has permitted the import of second-hand paper making machinery, it should be in sizes at least up to 100 tonnes per day capacity so that economies of scale are achieved.

Most of the new capacity for paper manufacture (other than newsprint) is to come from the private sector. To attract entrepreneurs to this industry government will have to make the climate favourable for large-scale investment in this capital intensive industry. Mr K. P. Singh, in his presidential address to the Indian Paper Mills Association recently estimated that the capital cost of a paper plant at today's prices works out to about

TABLE I
Profitability Ratios in Paper and Paper Products

	No. of companies		Gross profit as % of net sales*		Gross profit as % of total net assets		Profit after tax as % of net worth	
	Paper industry	All industries	Paper industry	All industries	Paper industry	All industries	Paper industry	All industries
1970-71	36	1650	16.5	10.3	12.2	10.3	15.6	10.6
1971-72	36	1650	16.5	9.9	12.7	10.3	15.6	9.7
1972-73	36	1650	13.5	9.4	10.1	10.2	11.7	9.3
1973-74	36	1650	14.4	10.7	11.1	11.2	12.1	11.6
1974-75	36	1650	24.5	11.4	22.4	12.8	21.2	13.7

*Net of rebates and discounts and excise duty and cess.

Source : Reserve Bank of India

Rs 9000 a tonne and the outlay for the total additional capacity sanctioned would come to Rs 450 crores. With a debt-equity ratio of 3 : 1 and interest rate on long-term borrowing at 12 per cent and an equal percentage payable as dividend to equity shareholders, the minimum price support for a new unit should be about Rs 6,250 a tonne. Allowing for the fact that the new units will not have to make tax payments for some time to come and also not to supply white printing paper at the concessional rate of Rs 2750 a tonne, the present sales realisation of Rs 3,500 a tonne comes nowhere near the cost of manufacture. The government will have to do some hard thinking how to help such capital intensive industries as paper and paper board. Last year a committee headed by the chair-

man, Bureau of Costs and Prices, Mr S. S. Marathe, had gone into the problems relating to investments in capital intensive industries. The government should take early steps to implement the recommendations of this committee.

For a few years the industry was basking in the sunshine of a sellers' market with a marginal gap in the supply and demand of paper. The shortage was particularly felt in white printing paper used for publication of text books and in exercise books for students. This invited governmental intervention in the interests of the student community and the reading public. The government ordered that 30 per cent of the production in the industry should be in the form of white printing paper to be supplied for government use and to the educational

publishers at the instance of the ministry of Education.

The industry was however free to sell the remaining 70 per cent of its production without restraint. It thus increased the price of uncontrolled varieties by 50 per cent to compensate for the unremunerative prices fixed for the controlled varieties. In recent months due to a slump in demand prices of many varieties have come down steeply. The jolt has been so severe that even the survival of many units is in jeopardy. It is alleged that during the boom period the industry's profits had become excessive and most of the units had turned extravagant in spending. The scale of expenditure once acquired had become impossible to reduce.

There is, however, no doubt

that this interference with choice of production and unremunerative price fixed for white printing paper has rendered even the bigger mills unable to make two ends meet. Against this background many paper projects are finding it difficult to raise finance from the market or obtain assistance from term financial institutions.

As a result of the imposition of Paper (Control of Production) Order, 1974 the production of white printing paper rose from 173,400 tonnes in 1974 to 193,000 tonnes in 1975 and may now be in the range of 200,000 tonnes. But the allottees showed little interest in lifting their quotas and huge stocks of white printing paper piled up with the mills. Even many state governments did not lift the stocks.



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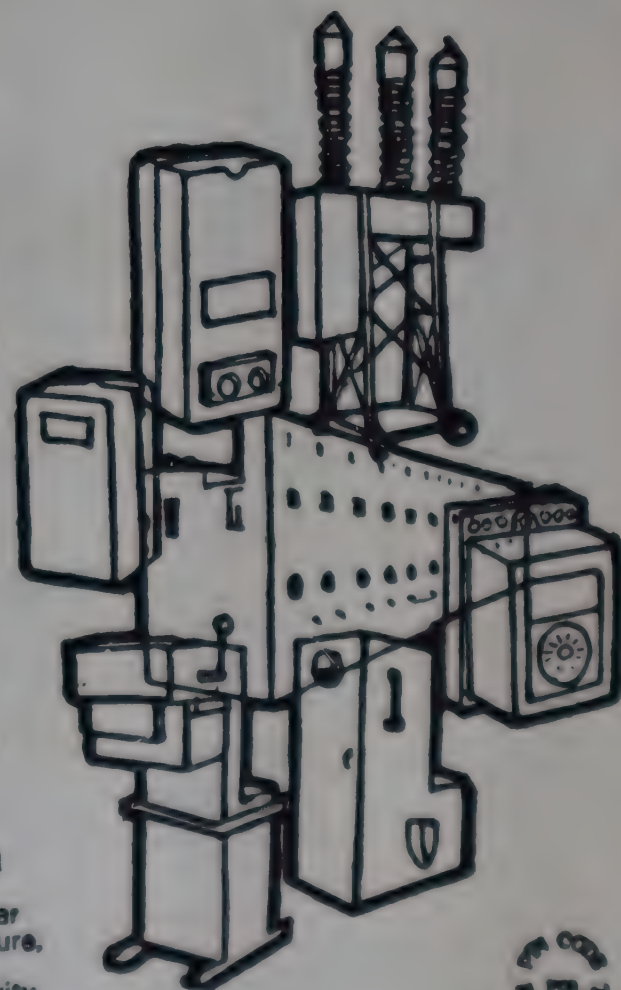
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otted to them for govern-
ment consumption.

In February last the mills were permitted to sell a part of their production of white printing paper in the open market. This concession was withdrawn in November on the plea that the allottees had started lifting their quotas and market conditions had improved. This curb has disturbed the demand and supply balance of white printing paper again. The reasonable course would be to amend the order requiring the mills to produce only as much of the controlled variety as was actually ordered. The industry's estimate is that the educational sector needs only 80,000 to 90,000 tonnes. The government supplies will total about 70,000 tonnes. Currently there is an excess production of 40,000 tonnes of controlled varieties. The price of printing paper which was pegged at Rs 2,750 two years ago is wholly unremunerative. There is a slump in the sale of other varieties of paper and prices have dipped by Rs 500 to 600 per tonne with the result that these other varieties can-

not take the load of the loss incurred on the controlled varieties.

The depressed market conditions which set in about 1½ years ago continue to this day though recently it was reported that market for paper and paper board had started picking up. The industry has a heavy inventory to support with some mills having an inventory sales ratio of 30 per cent. With credit squeeze from the banks, this is posing a real problem particularly to the smaller units whose viability even is doubted by financial institutions and their expansion schemes cold-shouldered.

In July last the government gave excise relief for excess production over a selected base year. This concession applies to all categories of paper and paper boards. But the specific duty was changed earlier in the budget into ad valorem causing undue hardship. To encourage demand the Development Council for Paper, Pulp and Allied Industries has recommended to the government adjustment of excise duties

to alleviate pressure on the market and a downward revision in the proportion of production reserved for white printing paper. It has also suggested withdrawal of ban on the export of cultural paper. The Development Council has also recommended fiscal concessions to make it economical for newspapers to use white printing paper in place of imported newsprint. It has advised the government to convert proposals for the gift of paper by some Scandinavian countries into equipment usable in the paper industry and to impose ban on the import of art paper.

The industry has urged the L.K. Jha Committee, appointed by the government to look into the indirect tax structure, to recommend a reduction in excise duty by 10 per cent. The current excise duty on cultural varieties of paper is 25 per cent ad valorem and 30 per cent on packing and wrapping paper. These levies represent a six-fold increase over the level of excise duty levied in 1971-72. It has also represented that there

should be a reduction in the manufacture of controlled varieties of paper. Unless these concessions are given, it is feared that paper industry may before long join textile and jute industries on the sick list.

The slump in the market is to be seen in the context of the rising import bill on speciality papers and newsprint. The price of paper as well as newsprint has risen in international markets. The import bill on this account was Rs 39.7 crores during the first seven months of 1975-76 for which figures are available as against Rs 27.9 crores during the same period in the previous year. In that year (1974-75) the imports had risen both in quantity and value. They were of the order of Rs 58.9 crores as against Rs 29.2 crores in 1973-74, Rs 31.4 crores in 1972-73 and Rs 34.9 crores during 1971-72. The contribution to this increase in import bill came mainly from newsprint which rose in unit value by more than a hundred per cent in international markets. If a way was found to

TABLE II
Production of Paper & Paperboards (Averages)

(Thousand tonnes)

	Printing and writing	Wrapping	Special varieties	Boards	Total
1961	19.1	5.0	0.8	5.5	30.4
1971	39.0	13.4	2.3	10.4	65.1
1972	36.9	13.8	3.3	11.4	65.4
1973	36.5	13.4	4.2	10.6	64.7
1974	37.1	15.9	4.3	11.6	68.9
1975	41.2	12.9	3.8	9.9	67.9
1976 January	44.2	16.6	1.7	10.7	73.2
February	43.4	12.3	1.7	10.8	68.2
March	41.7	15.5	1.1	11.4	69.6
April	43.0	16.0	1.1	11.7	71.8
May	..	..	..	..	76.0
June	..	..	..	..	72.0
July	..	..	..	..	77.5

enable use of white printing paper in place of newsprint by suitable fiscal incentives and other technical innovations it would solve the problem of slack in the offtake of white printing paper as well as mitigate to some extent the drain on foreign exchange due to newsprint import.

On the basis of current production of paper and paper board it is estimated that some 2.5 million tonnes of raw material of varying grades is used in the country. The location of the paper industry is determined by the proximity of raw material because of the enormous haulage charges. At the moment bamboo is the main raw material for the industry. Recently eucalyptus and other hard woods have started to be used. A survey conducted a few years ago

revealed that our forest resources do not yield sufficient quantities of raw material for paper industry and it was therefore necessary to search for alternative sources. Bagasse from sugar mills was considered a natural choice. Though in a few other countries bagasse-based units are faring well, a few proposals were mooted here only to be given up too soon. Apart from bagasse being used as fuel in the sugar industry, a major handicap in its use as raw material for paper industry is the seasonal operation of the sugar industry which would involve stacking of bagasse for later use through the monsoon with the possibility of rotting. The sugar industry also demanded that it should be provided with adequate quantities of coal and its furnaces converted for use of

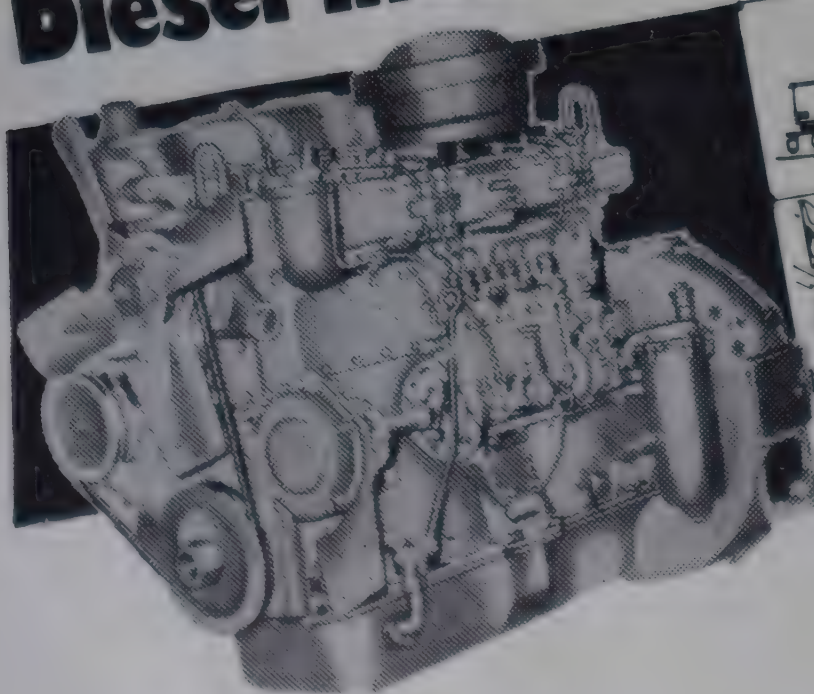
coal at the expense of the paper units.

Some paper mills are however guided in their location by the nearness of the market. In the beginning these units processed imported pulp and later on many of them manufactured their own pulp out of agricultural straw, waste paper and rags. Most of these mills produce cheaper qualities of wrapping and packing paper.

According to the estimates of the National Commission on Agriculture, the requirements of pulp and bamboo for the paper industry would come to some five million tonnes and 2.2 million tonnes respectively by 1980. It has also suggested that by 1980, additional investment of Rs 242 crores should be made for clear-felling and raising plantations. In the long-term pers-

pective, the National Commission on Agriculture has estimated an investment of Rs 9 crores between 1981 and 1990 for clear-felling and plantation of forests for the paper industry alone and has recommended establishment of forest development corporations in the states for the plantation of fast-growing species for wood-based industries. Eleven states have already set up such corporations. A provision of Rs 10 crores has been made in the fifth Plan for central participation in the equity of these state corporations. If the plantation programmes envisaged by the Agriculture Commission are undertaken, all the future raw material requirements of both pulp and paper will be adequately met. The paper industry will in future be based by and large

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and woods, its representatives could be closely associated with the schemes that these forest corporations may launch for plantation.

There are three units in the country producing rayon grade pulp with an installed capacity of 118,500 tonnes per year. One of the units is implementing an expansion programme to increase production by 20,000 tonnes per year. The total production of these units in 1975 was 110,000 tonnes which was a shade lower than the production in 1974. The national laboratories under the Council of Scientific and Industrial Research have developed the know-how for obtaining industrial grade pulp and paper from local plants which promise production in the country of all the industrial grade pulp and paper required. Pulp from plant cellulose is the basic raw material for synthetic fibres, rayon and cellophane industry. The current production of the pulp is hardly 60,000 tonnes annually, i.e., nearly half of our requirements of pulp is imported.

huge potential

The country is supposed to possess a huge potential of cellulosic materials. But so far there has been no systematic assessment of this potential. Commercial utilisation of the known sources is poor. It is ironic that even with the current abundance of raw material we have to import pulp from abroad for millions of rupees.

The National Chemical Laboratory (NCL), Pune, has lately developed processes for producing rayon grade pulp from eucalyptus and from hard wood obtained in the forests of Bastar. The cost per tonne of this grade of pulp on a pilot

scale comes to about Rs 1,750. These rayon grade pulps can be used for filament rayon, cellophane and tyre cord. NCL has also developed processes for obtaining dissolving grade pulp for synthetic fibre and rayon industries from bamboo and other hard woods. The pulp is produced in sheets which can be cut to size.

rayon grade mills

The following units were issued letters of intent by the government for the establishment of capacity to manufacture rayon-grade pulp:

Name of unit	Capacity per year (tonnes)
Century pulp	20,000
Modipon	30,000
Baroda Rayon Corporation	30,000
Tamil Nadu Industrial Development Corporation.	42,000
Andhra Pradesh Industrial Development Corporation.	26,250
Gogte Minerals	30,000

Based on an anticipated increase in the demand of newsprint at the rate of five per cent per annum, our requirements were estimated at 350,000 tonnes in 1978-79. The only factory in the country producing newsprint in the public sector, the National Newsprint and Paper Mills Ltd, produced 54,000 tonnes of newsprint in 1975, one thousand tonnes less than in 1974 and short of the target for the year by some 6,000 tonnes. The company was in the process of expansion and the shortfall was attributed to teething troubles. The mill is expanding its capacity to 75,000 tonnes. Its production has picked up lately and, according to the latest figures, between April

and October 1976 it was 32,933 tonnes as against 29,718 tonnes during the same period in 1975, indicating a 10.8 per cent increase.

newsprint capacity

A newsprint factory is coming up in Kerala in the public sector with a capacity of 80,000 tonnes per year. It will start production in 1977-78. A number of schemes have been approved for establishing new units. These include the West Bengal Industrial Development Corporation's scheme for a manufacturing capacity of 60,000 tonnes per year. Four schemes in the private sector that have been approved are Ballarpur Industries' scheme for a capacity of 60,000 tonnes, Ram Ganga Paper Mills and Hargolal & Sons' schemes for 30,000 tonnes capacity each and that of Century Pulp for a capacity of 20,000 tonnes per year. By the end of the fifth

five year Plan, the country will still be importing newsprint, as, out of the new schemes approved, only the Kerala newsprint mill of Hindustan Paper Corporation will have gone into operation with a production capacity of 80,000 tonnes taking the total capacity to 150,000 tonnes of newsprint per year.

On the eve of the third Plan period, the government felt concerned that fresh capacity for the manufacture of paper in the private sector was not coming up adequately to cover future demand. This was not strictly correct so far as paper and paper boards are concerned, though in the case of newsprint no private sector concern had come forth with any worthwhile proposal. This was mainly because of newsprint production being highly capital intensive and having a long gestation period. In the year 1968-69 against a demand of 165,000

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tonnes of newsprint, indigenous production was below 40,000. According to prospective official estimates at that time the demand for newsprint in the country by 1973-74 would have risen to 260,000 tonnes which would require a capacity for production of 300,000 tonnes. With no project in sight for the production of newsprint approaching this figure, the government decided to set up Hindustan Paper Corporation in the public sector which came into being in 1970. The main function of the corporation is to establish new pulp, paper as well as newsprint mills and to take over any 'sick' paper mills which the government thinks should be run in the public interest. The corporation at present has a nominal capital of Rs 50 crores which is likely to be increased to Rs 100 crores.

At present Hindustan Paper

Corporation is engaged in the setting up of an integrated pulp and paper mill in Nagaland with an annual capacity of 33,000 tonnes. The project is being executed by a subsidiary of the corporation, the Nagaland Pulp and Paper Co Ltd. It is a joint venture of Hindustan Paper Corporation and the Nagaland government with an equity participation of 7:1 respectively. It has a nominal capital of Rs 34 crores and a subscribed capital of Rs 27 crores. The work on the erection of the mill is in an advanced stage of completion. The integrated mill is expected to go into production by October 1977.

Hindustan Paper Corporation has also under construction an integrated newsprint mill in Kerala with an annual capacity of 80,000 tonnes and a capital outlay of Rs 83 crores. Work on its construction is in

full swing. Agreement for the supply of machinery and spares has been entered into with a West German firm and for mechanical refiner with a Swedish company. The project is expected to be commissioned in the next two years.

The corporation has on hand two more integrated projects in Assam, one in Cachar and the other in Nowgong district. The estimated cost of both the plants is Rs 114 crores each. Both are to have a capacity to produce 100,000 tonnes. It is reported that the Finance ministry is none-to-eager to commit itself on these two projects. This is perhaps in view of the wide disparity between the projected demand on which these plants were envisaged and the demand that has actually emerged. However a token allocation has been made till the Public Investment Bureau gives its approval to the two projects.

Hindustan Paper Corporation in 1974 took over at instance of the government India the Mandya National Paper Mills, a private sector 'sick' mill in Karnataka. Though the mill had earned profit of Rs 30 lakhs during 1975-76 it has reported loss to the tune of Rs 23 lakhs during the six months to October 1976. This is attributed to lower market realisations and other operational problems. After the balancing equipment is installed the mill is expected to have a capacity of 16,500 tonnes per annum. The corporation has formulated an expansion scheme for the mill costing Rs 36 crores. This will raise the capacity of the Mandya mill to 40,000 tonnes per annum. The Hindustan Paper Corporation was recently asked by the government to take over the India Paper Mills Co Ltd. which had gone on

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—Prime Minister, Shrimati Indira Gandhi

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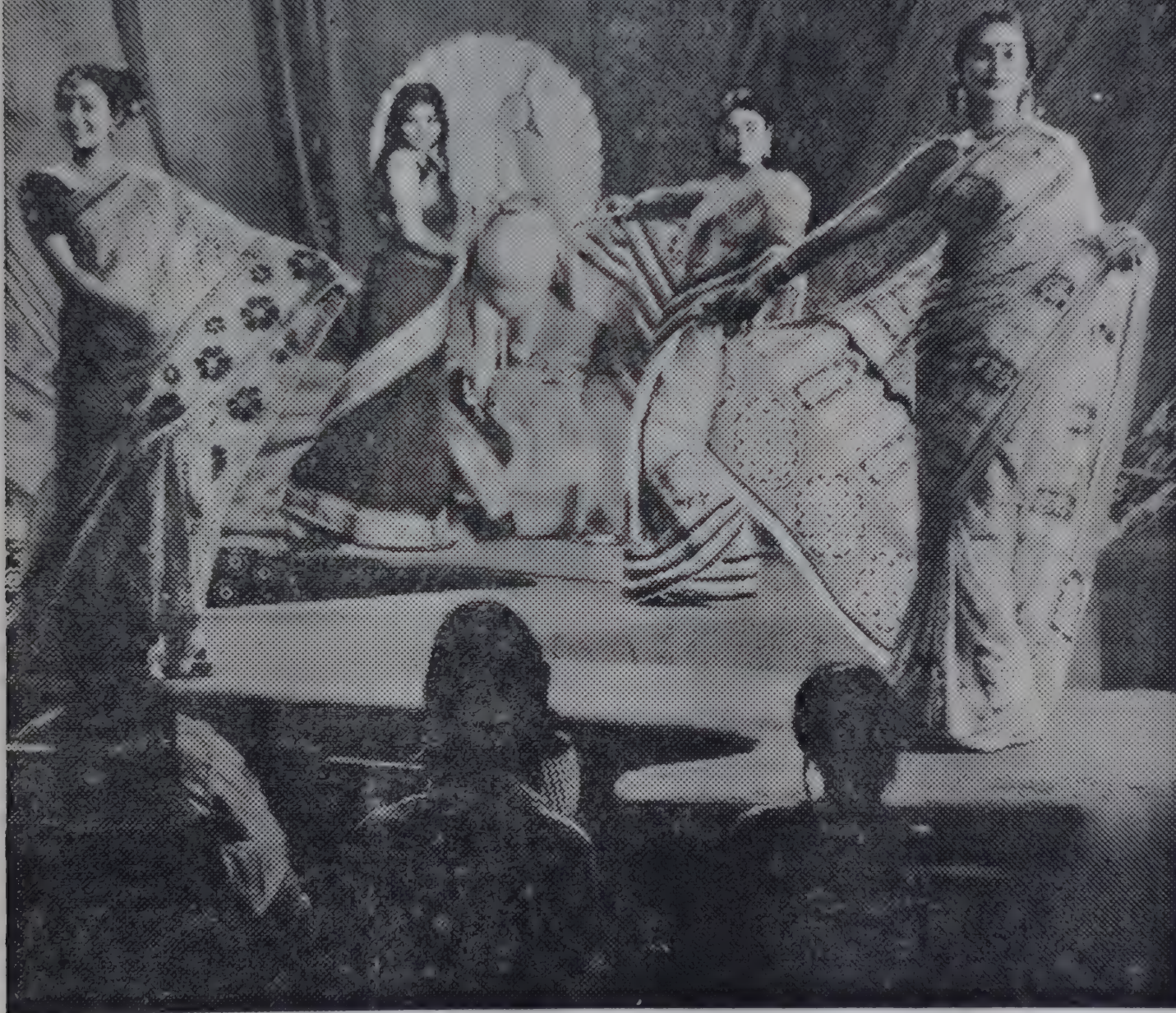
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'sick list. The government has sanctioned Rs 200,000 to the corporation to advance to the India Paper Pulp Co for rehabilitation. Finance has also been arranged with other term financing institutions such as IFCI, ICICI etc.

The research work done on paper in our laboratories is yielding wholesome results. Speciality papers which are mostly imported can now be manufactured in the country from indigenous raw materials. The Regional Research Laboratory, Hyderabad, has perfected technology for the manufacture of filter papers and pads used in laboratories and chemical and pharmaceutical industries, drawing papers for engineers as well as document

and bond papers for use in archives. Waste materials from garment making industry, tailors' cuttings and cotton linters can be used in the making of these speciality papers. Products obtained on pilot plant scale satisfy the requirements of quality.

The Regional Research Laboratory, Jorhat, has developed processes for producing thermographic papers used in copying and duplicating machines. Carbon papers, parchment papers and direct copying papers are some other specialities for which know-how has been developed by our laboratories.

The Jorhat laboratory has developed know-how for the

production of matrix board, utilising bamboo and pulp as raw materials. Matrix board is a heavy absorbant, smooth surfaced board having high stretch, high compressibility and definite shrinkage properties. It is used for making duplicate plates called "stereo-type plates" required in printing industry. At present there is no indigenous production of matrix board and the entire demand is being met by imports.

The United Nations Development Programme (UNDP) has sanctioned a 4-year project for the identification of alternative raw materials for paper industry in India. The project commenced on January 1, 1975. The Hindustan Paper Corporation represents the govern-

ment and the Food and cultural Organisation represents the UNDP programme for the execution of the project. The main objective of the project is to improve the research facilities at Forest Research Institute, Dehra Dun, and training facilities at the Institute of Technology, Saharanpur, to develop improved technology in the field of cell chemistry and paper manufacture. The government contributed Rs 17.45 million towards the execution of project and the FAO \$1 million. Orders for the plant and equipment for two pilot plants at Dehra and Saharanpur have already been placed and civil work is under execution.

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INDIAN COFFEE INDUSTRY

COFFEE PRODUCTION in India has increased from 14,454 tonnes in 1940-41 to 92,000 tonnes in 1974-75. A 535 percent increase in $3\frac{1}{2}$ decades!

COFFEE EXPORTS during 1974-75 touched a new high bringing in much needed foreign exchange to the tune of over 58 crores of rupees.

These results were achieved with no corresponding major increase in the area (1,55,267 hectares) under coffee.

Activities of the COFFEE BOARD of India are not confined to production and exports, but geared to the development of all facets of the Indian Coffee Industry.

The Coffee Board's RESEARCH AND EXTENSION Departments (in Balehonnur, Chikmagalur district of Karnataka state) ensure scientific cultivation of the coffee plant and achievement of increased productivity.

COFFEE DEVELOPMENT plans of the Board provide LOANS for: intensive cultivation; replanting; purchase of equipment and machinery, on hire purchase terms; working capital (on crop hypothecation); and for improvement of pulping units, drying yards etc., mainly to help over 52,000 small coffee holdings (out of a total of over 54,000 coffee estates). Labour welfare measures are always there, since $2\frac{1}{2}$ lakh workers are employed daily on coffee plantations.

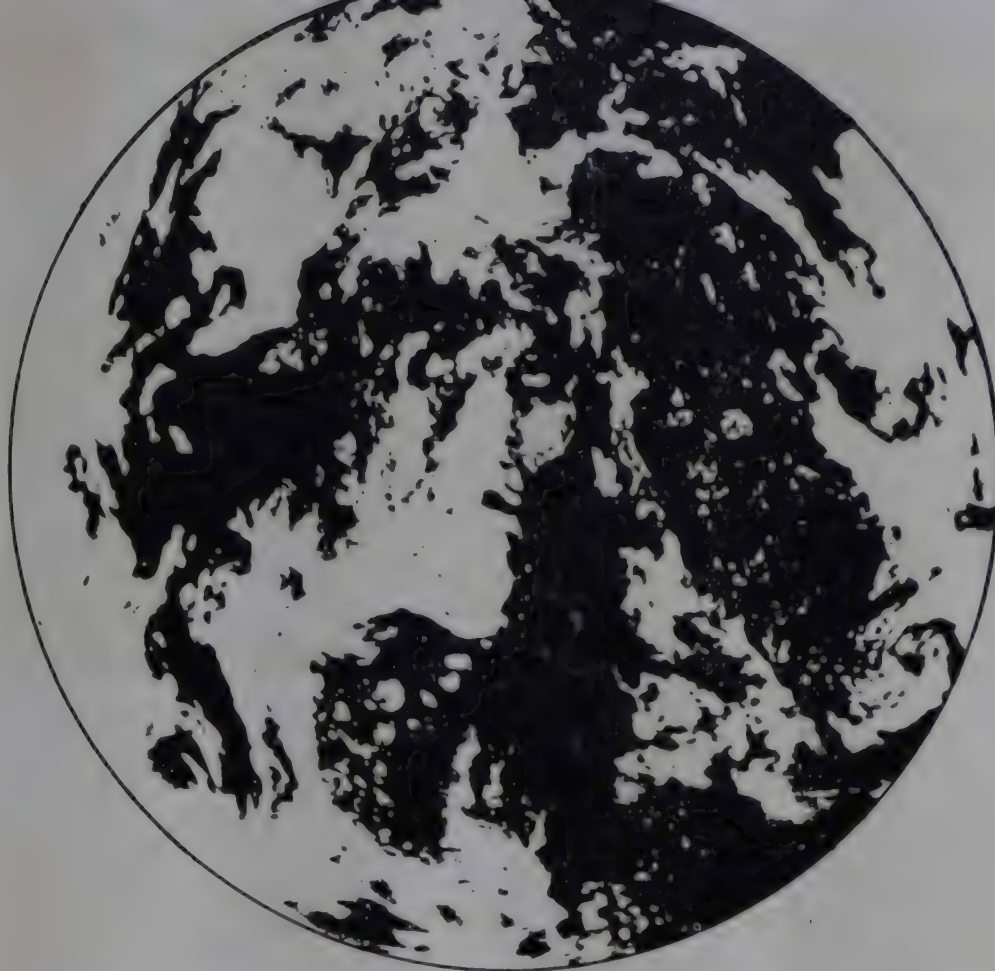
COFFEE MARKETING covers a wide range of operations, from making payments, on the basis of quality, to planters, for coffee grown by them and delivered to the common pool (as per the Coffee Act) to curing and the organisation of auctions for internal sales and exports.

COFFEE PROMOTION, by the Coffee Board, besides resulting in increasing exports, has built a home market, which accounts annually for 40,000 tonnes of coffee.

Increasingly the current emphasis is on increasing exports and production.

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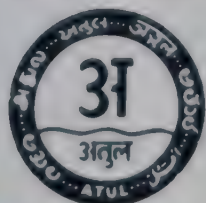
Alfred Allan

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